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I.

Observations on Vision. *By* David Hosack, M. D. F. L. S. *Read before the Royal Society of London, May 1st, 1794, and published in their Transactions of the same year. Communicated to the Society by* George Pearson, M. D. F. R. S. &c.*

(See the annexed Engravings.)

By what power is the eye enabled to view objects distinctly at different distances? As the pupil is enlarged or diminished according to the greater or less quantity of light,

* When the author was prosecuting his medical studies in London, in 1794, the following paper was written, and submitted to the private examination of Sir Joseph Banks, Dr. Andrew Marshall, Dr. George Pearson, the late Dr. Robert Willan, Dr. William Woodville, and Mr. George Adams, the late celebrated optician. By their advice it was communicated to the Royal Society, and was published in the Philosophical Transactions for the same year. Since that time various publications have appeared upon the same subject. In some of these, the writers, passing over in profound silence the observations of the author, have taken to themselves the credit of having given the first illustration of the manner in which the external muscles of the eye operate in adapting it to the different distances of objects. He excepts from this imputation the late Dr. George Gregory and William Nicholson, Esq. The former, in his Economy of Nu-

and, in a certain degree, to the distance of the object, it would readily occur that these different changes of the pupil would account for the phenomena in question. Accordingly, anatomists and philosophers, who have written upon this subject, have generally had recourse to this explanation.

Amusing myself with these changes of the pupil, as a matter of curiosity, by presenting to the eye different objects at different distances, I soon perceived that its contraction and dilatation were irregular and more limited than had been supposed: i. e. that approaching the object nearer the eye, within a certain distance, the pupil not only ceased to contract, but became again dilated; and that beyond a few yards distance, it also ceased to dilate: these circumstances immediately occurred as objections to the above explanation; for were it from the contraction and dilatation of the iris alone that we see objects at different distances, I naturally concluded it should operate regularly to produce its effects; but if to view an object at a few yards distance it be enlarged to the utmost extent, surely it must of itself be insufficient to view one at the distance of several miles; for example, the heavenly bodies.

Another difficulty here presents itself: in viewing the sun, instead of dilating, according to the distance, it contracts, obeying rather the quantity, or intensity of the light, than the distance of the object. Knowing no other obvious power in the eye itself of adapting it to the different distances of objects, it occurred to me to inquire, whether the combined

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ture, and the latter, in his Journal, have candidly noticed, and liberally acknowledged the claims of those who have preceded them. Upon a future occasion the author proposes to submit to the public some additional observations, and a summary view of the facts and illustrations which have lately been adduced in support of the doctrine contained in the present paper. D. H.

action of the external muscles could not have this effect. I first proposed this query to an optician of eminence in London,* and who has written expressly on this subject. I repeated the same question to a celebrated teacher of anatomy.† Encouraged by their replies, I have since attended more particularly to the subject, and hope my inquiries have not been altogether unsuccessful. As introductory to a more distinct view of what I have to advance, it appears necessary to premise the following observations, relative to those general laws of vision which are more particularly connected with this part of the subject, and to which we shall have occasion of frequent reference.

1st. Let A B C, (see plate 1st, fig. 1.) be an object placed before the double convex lens D E, at any distance greater than the radius of the sphere whereof the lens is a segment; the rays which issue from the different points of the object, and fall upon the lens, will be so bent by the refractive power of the glass as to be made to convene at as many other points behind the lens, and at the place of their concourse they will form an image or picture of the object. The distance of the image behind the glass varies in proportion to the distance of the object before the glass; the image approaching as the object recedes, and receding as that approaches. For if we suppose, (fig. 2.) A and B, two radiating points, from which the rays A C, A D, and B C, B D, fall upon the lens C D, it is manifest, that the rays from the nearest point A diverge more than those from the more distant point B, the angle at A being greater than that of B;‡ consequently the rays from A, whose direction is A E and

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* Mr. George Adams.

† Dr. Andrew Marshall, of Thavies Inn.

‡ Euclid, Book I. Prop. 21.

A F when they pass through the glass, must convene at some point (as G) more distant from the lens than the point H, where the less diverging rays B K and B L from the point B are made to convene; which may also be proved by experiment with the common convex glass.*

It will be necessary to have this proposition in view, as we shall afterwards have occasion to use it in showing, that by varying the distance between the retina and the anterior part of the eye we are enabled to see objects at different distances.

2d. If an object, as A B, (fig 3.) be placed at a proper distance before the eye (E,) the rays which fall from the several points of the object falling upon the cornea pass through the pupil, and will be brought together by the refractive power of the different parts of the eye on as many corresponding points of the retina, and there paint the image of the object, in the same manner as the images of objects placed before a convex lens are painted upon the spectrum, placed at a proper distance behind it; thus the rays which flow from the point A are united on the retina at C, and those which proceed from B are collected at D, and the rays from all the intermediate points are convened at as many intermediate points of the retina; on this union of the rays at the retina depends distinct vision. But supposing the eye of a given form, should the point of union lie beyond the retina, as must be the case with those from the less distant object, agreeable to the preceding proposition; or should they be united before they arrive at the retina, as from the more distant object, it is evident that the picture at the retina must be extremely confused. Now, as the rays which fall upon the eye from radiating points at different distances have differ-

* See Kepler, Diopt. Postul. Smith's Optics, Gravesande, &c.

ent degrees of divergence, and the divergence of the rays increasing as the distance of the radiating point lessens, and, *vice versa*, lessening as that increases; again, as those rays which have greater degrees of divergence, viz. from the nearer objects, require a stronger refractive power to bring them together at a given distance than what is necessary to make those meet which diverge less, it is manifest, that to see objects distinctly at different distances, either the refractive power of the eye must be increased or diminished, or the distance between the iris and retina be varied, corresponding with the different distances of the objects; both of which probably take place, as will hereafter appear.*

Having then established these as our premises, we shall next examine the different principles which have been employed for explaining vision at different distances.

Most writers upon this subject refer this power of the eye to the contraction and dilatation of the iris. Within certain limits this would, upon first examination, as already observed, appear to be the case, since the pupil enlarges as the object is further removed from the eye, and again contracts as it is brought near. The extent of this principle I have already pointed out; but I suspect we also err in attributing to the difference of distance what are only effects of different quantities of light, a circumstance in which it is the more easy to commit error, as they are generally proportionate one to the other; i. e. as the object is near we require a less degree

* Facile enim intelligitur, quo longius radii adveniunt, eo magis esse parallelos; eo minus ergo differre ab axi, et eo minoribus viribus corneæ et lentis crystallinæ in focum cogi. Ut enim corpus magis distat, ita sub minori angulo radii adveniunt. Contra si corpus conspicuum valde vicinum fuerit, radiorum ab eo advenientium angulus est major, et adeo magis divergentes in oculum incidunt, et viribus egent refringentibus majoribus omnibus densioribus. *Haller. Elem. Phys.* lib. xvi.

of light, and to exclude what is superfluous the iris contracts; but as it is more distant, a greater quantity of light becomes necessary, and the iris dilates: thus far we see the use of the enlargement or diminution of the pupil, as the object is more or less distant. But distinct vision does not consist in the quantity of light alone, though too much or too little would obscure the image.

It is also necessary that the rays which flow from the object should fall upon the retina in a certain direction, to form a distinct picture; but surely the greater or less quantity of light, the greater or less number of rays, which it is only the property of the iris to diminish or increase, cannot alter the direction.

But there is still another argument to prove, that the contraction or enlargement of the pupil is not of itself sufficient to produce distinct vision at different distances, viz. that the myopes, whose pupil contracts and dilates as in other eyes, are still unable to adapt the eye to different distances; and the means by which this is remedied certainly does not consist in a larger or smaller aperture for the rays to pass through, but a power of altering their direction, which the change in the shape of the eye had rendered too convergent. The same fact is also observable in those who squint; the pupil in both eyes equally contracts and dilates, but still the vision of one eye is less perfect than the other. Another principle upon which it has been attempted to explain this power of the eye, is a supposed change in the convexity of the crystalline lens: the ancients had some obscure notion of it, but it has been lately pursued by Mr. Thomas Young, in a paper published in the Philosophical Transactions of London, for 1793. He has endeavoured to demonstrate the existence of muscles in the crystalline lens, and by their action to account for distinct vision at different distances. This opinion deserves here the more particular examination, having met

the attention of the Royal Society, and thereby likely to influence the general opinion upon this subject.

That we may not mistake the meaning of the author, I beg leave to premise his description of the structure of the lens: "The crystalline lens of the ox," he observes, "is an orbicular convex transparent body, composed of a considerable number of similar coats, of which the exterior closely adhere to the interior; each of these coats consists of six muscles, intermixed with a gelatinous substance, and attached to six membranous tendons. Three of these tendons are anterior, three posterior; their length is about two-thirds of the semidiameter of their coat; their arrangement is that of three equal and equidistant rays meeting in the axis of the crystalline; one of the anterior is directed towards the outer angle of the eye, and one of the posterior towards the inner angle; so that the posterior are placed opposite to the middle of the interstices of the anterior, and planes passing through each of the six, and through the axis, would mark on either surface six regular equidistant rays. The muscular fibres arise from both sides of each tendon, they diverge till they reach the greater circumference of the coat, and having passed it, they again converge till they are attached respectively to the sides of the nearest tendons of the opposite surface. The exterior or posterior portion of the six, viewed together, exhibits the appearance of three penniformi-radiated muscles."

In the first place, to say nothing of the transparency of muscles, as an argument against their existence, we must unavoidably suppose, as they have *membranous tendons*, which Mr. Young informs us he distinctly observed, that these tendons cannot possess the same degree of transparency and density with the bellies of these muscles; that is, they must possess some degree of opacity, or certainly he could not have pointed out their membranous structure, nor even the

tendon itself, as distinct from the body of the muscle; and if they have not the same density, from their situation, and being of a penniform shape, must there not be some irregularity from the difference in the refraction of those rays which pass through the bellies of those muscles, and those again which pass through their membranous tendons? This structure then, of consequence, cannot be well adapted for a body whose regular shape and transparency are of so much consequence.

Again, Mr. Young describes six muscles in each layer; but Leeuwenhoek, whose authority he admits as accurate, relative to the muscularity of the lens, is certainly more to be attended to in his observation of bodies less minute, viz. as to the layers themselves, in which these muscles are found; which of course are larger, and more easily observed; but, with his accuracy of observation, he has computed, that there are near two thousand laminæ; and according to Mr. Young, supposing each layer to contain six muscles, we have necessarily, in all, twelve thousand muscles; the action of which certainly exceeds human comprehension. I hope this will not be deemed trifling minuteness, as it is a necessary and regular consequence, if we admit their existence as described.

But secondly, as to the existence of these muscles, I cannot avoid expressing a doubt. With the utmost accuracy I was capable of, and with the assistance of the *best* glasses, to my disappointment, I cannot bear witness to the same circumstances related by Mr. Young, but found the lens perfectly transparent: at the same time, lest it might be attributed to the want of habit in looking through glasses, I beg leave to observe, that I have been accustomed to the use of them in the examination of the more minute objects of natural history. After failing with the glasses in the natural viscid state of the lens, I had recourse to another expedient; I

exposed different lenses before the fire to a moderate degree of heat, by which they became opaque and dry; in this state it is easy to separate the layers described by Mr. Young; but although not so numerous as noticed by the accurate Leeuwenhoek, still they were too numerous to suppose each to have contained six muscles; for I could have shown distinctly at least fifty layers, without the assistance of a glass, as was readily granted by those to whom I exhibited them.

But a circumstance which would seem to prove that these layers possess no distinct muscles, is, that in this opaque state they are not visible, but consist rather of an almost infinite number of concentric fibres (if the term be at all appropriate) not divided into particular bundles, but similar to as many of the finest hairs of equal thickness, arranged in similar order: see fig. 4, 5, and 6, where the arrangement of the layers and fibres has been painted from the real lens of an ox, and that without the assistance of a glass. To observe this fact, any person may try the experiment at pleasure, and witness the same with the naked eye, even separating many layers and their fibres with the point of a penknife.

This regular structure of layers, and those consisting of concentric fibres, is unquestionably better adapted for the transmission of the rays of light, than the irregular structure of muscles. It may, perhaps, be urged, that the heat to which I exposed the lens may have changed its structure: in answer to that I observe, it was moderate in degree, and regularly applied; of consequence we may presume, as it appeared uniformly opaque, that every part was alike acted upon: but by boiling the lens, where the heat is, without doubt, regularly applied, we observe the same structure.

Thirdly, that it is not from any changes of the lens, and that this is not the most essential organ in viewing objects at different distances, we may also infer from this undeniable

fact, that we can, in a great degree, do without it: as after couching or extraction, by which operations all its parts must be destroyed, capsule, ciliary processes, muscles, &c.

Mr. Young asserts, from the authority of Dr. Porterfield, that patients, after the operation of couching, have not the power of accommodating the eye to the different distances of objects; at present, I believe the contrary fact is almost universally asserted.*

Besides, if the other powers of the eye are insufficient to compensate for the loss of this dense medium, the lens, a glass of the same shape answers the purpose, and which certainly does not act by changing its figure. I grant their vision is not so perfect; but we have other circumstances upon which this can be more easily explained; which will be particularly noticed under the next head. It may not be improper also to observe, that the specific gravity of the crystalline, compared with that of the vitreous humour, and of consequence, its density and power of refraction, is not so great as has been generally believed. Dr. Bryant Robinson, by the hydrostatic balance, found it to be nearly as eleven to ten. I have also examined them with the instrument of Mr. Schmeisser, lately presented to the Royal Society, and found the same result; of consequence, the crystalline lens is not so essentially necessary for vision as has been represented; especially, as it is also probable, that upon removing it, the place which it occupied is again filled by the vitreous hu-

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* "Et lente ob cataractam extracta vel deposita oculum tamen ad varias distantias videre, ut in nobili viro video absque ullo experimento quo eam facultatem recuperaverit. Etsi enim tunc ob diminutas vires quæ radios uniunt, æger lente vitrea opus habet, eadem tamen lens in omni distantia sufficit."—*Haller. El. Phys.*

"La lentille cristalline n'est cependant point de première necessité pour la vision. Aujourd'hui, dans l'opération de la cataracte on l'enlève entièrement, et la vision n'en souffre point."—*De la Metherie Vues Physiologiques.* See also *De la Hire, Hamberger's Physiolog.*

mour, whose power of refraction is nearly equal. At the same time we cannot suppose the lens an unnecessary organ in the eye, for nature produces nothing in vain; but that it is not of that indispensable importance, which writers upon optics have taught us to believe.

Fourthly. Mr. Young tells us, he has not yet had an opportunity of examining the human crystalline; and grants, that from the spherical form of it in the fish, such a change as he attributes to the lens in quadrupeds cannot take place in that class of animals. The lenses which I have examined in the manner above mentioned were the human, those of the ox, the sheep, the rabbit, and the fish, and in all the same lamellated structure is observable; even in the spherical lens of the fish these lamellæ are equally distinct, but without the smallest appearance of a muscle.

From these circumstances I cannot avoid the conclusion, that they do not exist; at the same time I am persuaded that Mr. Young met with appearances which he supposed were muscles; but I am satisfied he will readily acknowledge, that the examination of the crystalline lens in its viscid glutinous state, is not only attended with much difficulty, but that the smallest change of circumstances might lead to error; which I apprehend may, probably, have been the case in that instance.

Upon examining it after boiling, or exposing it to a gradual degree of heat before the fire, when it may be handled with freedom, he will readily observe (without a glass) the numerous lamellæ, and the arrangement of their fibres, which I have described.

Another opinion has been sanctioned by many respectable writers, of the effects of the ciliary processes in changing the shape and situation of the lens; some supposed it to possess the power of changing the figure of the crystalline, rendering

it more or less convex ;* others, that it removed it nearer to the cornea ;† and others, that it removed it nearer the retina.‡

The advocates for these different opinions all agree in attributing these effects to a supposed muscularity of the ciliary processes.

Of the structure of these processes Haller observes, " In omni certe animalium genere processus ciliares absque ulla musculosa sunt fabrica, mere vasculosi vasculis serpentinis percursi molli facti membrana ;" which structure, I believe, at present is universally admitted. But even supposing them muscular, such is their delicacy of structure, their attachment, and direction, that we cannot possibly conceive them adequate to the effects ascribed to them. Besides, what we observed of the muscles of the lens itself, also applies to the processes, viz. that they may be destroyed, as in couching or extraction, and yet the eye be capable of adapting itself to the different distances of objects. For a more full refutation of these opinions, see Haller's large work.

The Situation, Structure, and Action of the external Muscles.§

Upon carefully removing the eyelids, with their muscles, we are presented with the muscles of the eye itself, which are six in number; four called recti, or straight; and two oblique; so named from their direction, (see plate IId. fig. 1.) A A A A, the tendons of the recti muscles, where

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* Des Cartes, Scheinerus, Bidious, Mollinettus, Sanctorius, Jurin.

† Kepler, Zinn, Porterfield.

‡ La Chariere, Perrault, Hartsoeker, Brisseau, and Derham.

§ For the accuracy of the representation I have annexed (see plate IId.) I can vouch, having been at much pains in the dissection ; from which I had the painting taken by a most accurate hand, Mr. S. Edwards, a gentleman well known for his abilities in the plates of that admirable work, the Flora Londinensis.

they are inserted into the sclerotic coat, at the anterior part of the eye. B, the superior oblique, or trochlearis, as sometimes called, from its passing through the loop or pulley connected to the lower angle of the orbiter notch in the os frontis; it passes under the superior rectus muscle, and backwards to the posterior part of the eye, where it is inserted by a broad flat tendon into the sclerotic coat. C, the inferior oblique, arising tendinous from the edge of the orbiter process of the superior maxillary bone, passes strong and fleshy over the inferior rectus, and backwards under the abductor to the posterior part of the eye, where it is also inserted by a broad flat tendon into the sclerotic coat. D D D, the fat in which the eye is lodged. In fig. 2. we have removed the bones forming the external side of the orbit, with a portion of the fat, by which we have a distinct view of the abductor. A B C, three of the recti muscles, arising from the back part of the orbit, passing strong, broad, and fleshy over the ball of the eye, and inserted by flat, broad tendons into the sclerotic coat, at its anterior part. D, the tendon of the superior oblique muscle. E, the inferior oblique; fig. 3. A, the abductor of the eye. B, the fleshy belly of the superior oblique, arising strong, tendinous, and fleshy from the back part of the orbit. C, the optic nerve. D and E, the recti muscles.

The use ascribed to these different muscles, is that of changing the direction of the eye, to turn it upwards, downwards, laterally, or in any of the intermediate directions, accommodated either to the different situation of objects, or to express the different passions of the mind, for which they are peculiarly adapted. But is it inconsistent with the general laws of nature, or even with the animal economy, that from their combination they should have a different action, and thus an additional use? To illustrate this we need only witness the action of almost any set of muscles in the body;

for example, in lifting a weight, the combined action of the muscles of the arm, shoulder, and chest, is different from the individual action of either set, or of any individual muscle; or an instance nearer our purpose may be adduced, viz. the actions of the muscles of the chest and belly, making a compression upon the viscera, as in the discharge of urine, fæces, &c. But to question this fact would be to question the influence of the will in any one of the almost infinite variety of motions in the human body.

I presume, therefore, it will be admitted, that we have the same power over these muscles of the eye as of others, and I believe we are no less sensible of their combined action; for example, after viewing an object at the distance of half a mile, if we direct our attention to an object but ten feet distance, every person must be sensible of some exertion; and if our attention be continued but for a short time, a degree of uneasiness and even pain in the ball of the eye is experienced; if, again, we view an object within the focal distance, i. e. within six or seven inches, such is the intensity of the pain that the exertion can be continued but a very short time, and we again relieve it by looking at the more distant objects; this, I believe, must be the experience of every person, whose eyes are in the natural and healthy state, and accordingly it has been observed by almost every writer upon optics.

But the power of this combination, even from analogy, appears too obvious to need further illustration. I shall therefore next endeavour to point out their precise action.

Supposing the eye in its horizontal natural position; I see an object distinctly at the distance of six feet, the picture of the object falls exactly upon the retina; I now direct my attention to an object at the distance of six inches, as nearly as possible in the same line; although the rays from the first object still fall upon my eye, while viewing the second, it

does not form a distinct picture on the retina, although at the same distance as before, which shows that the eye has undergone some change; for while I was viewing the first object I did not see the second distinctly, although in the same line: and now, *vice versa*, I see the second distinctly, and not the first; the rays from the first, therefore, as they still fall upon the eye, must either meet before or behind the retina; but we have shown that the rays from the more distant object convene sooner than those from the less distant object, therefore the picture of the object at six feet falls before, while the other forms a distinct image upon the retina; but as my eye is still in the same place as at first, the retina has by some means or other been removed to a greater distance from the fore part of the eye to receive the picture of the nearer object, agreeable to the principle, page 396. From which it is evident, that to see the less distant object, either the retina should be removed to a greater distance, or the refracting power of the media should be increased: but I hope we have shown that the lens, which is the greater refracting medium, has no power of changing itself. Let us next inquire, if the external muscles, the only remaining power the eye possesses, are capable of producing these changes. With respect to the anterior part of the eye, we have seen the situation of those muscles; the recti strong, broad, and flat, arising from the back part of the orbit, passing over the ball as over a pully, and inserted by broad flat tendons at the anterior part of the eye; the oblique inserted toward the posterior part, also by broad flat tendons; when they act jointly, the eye being in its horizontal position, it is obvious, as every muscle in action contracts itself, the four recti by their combination must necessarily make a compression upon the different parts of the eye, and thus elongate its axis, while the oblique muscles serve to keep the eye in its proper direction and situation. For my own part, I have no more diffi-

culty in conceiving of this combination of those muscles than I have at present of the different flexors of my fingers in holding my pen. But other corresponding effects are also produced by this action; not only the distance between the anterior and posterior parts of the eye is increased, but of consequence, the convexity of the cornea, from its great elasticity, is also increased, and that in proportion to the degree of pressure, by which the rays of light passing through it are thence necessarily more converged. But another effect, and one not inconsiderable, is, that by this elongation of the eye, the media, viz. the aqueous, crystalline, and vitreous humours through which the rays pass, are also lengthened, of consequence their powers of refraction are proportionably increased; all which correspond with the general principle. It may, however, be said, that as the four recti muscles are larger and stronger than the two oblique, the action of the former would overcome that of the latter, and thus draw back the whole globe of the eye; but does not the fat at the posterior part of the orbit also afford a resistance to the too great action of the recti muscles, especially as it is of a firm consistence, and the eye rests immediately upon it? Admitting then that this is the operation of the external muscles when in a state of contraction, it is also to be observed, we have the same power of relaxing them, in proportion to the greater distance of the object, until we arrive at the utmost extent of indolent vision.

But, as a further testimony of what has been advanced, I had recourse to the following experiment, which will show that the eye is easily compressible, and that the effects produced correspond with the principles I have endeavoured to illustrate.

With the common *speculum oculi* I made a very moderate degree of pressure upon my eye, while directing my attention to an object at the distance of about twenty yards; I saw

it distinctly, as also the different intermediate objects; but endeavouring to look beyond it, every thing appeared confused. I then increased the pressure considerably, in consequence of which I was enabled to see objects distinctly at a much nearer than the natural focal distance; for example, I held before my eye, at the distance of about two inches, a printed book; in the natural state of the eye I could neither distinguish the lines nor letters; but upon making pressure with the speculum I was enabled to distinguish both lines and letters of the book with ease.

Such then I conceive to be the action and effects of the external muscles, and which I apprehend will also apply in explaining many other phenomena of vision; some of those it will not be improper at present briefly to notice.

First. May not the actions of those muscles have more or less effect in producing the changes of vision which take place in the different periods of life? At the same time the original conformation of the eye, the diminution of its humours, and, probably, of the quantity of fat upon which the eye is lodged, are also to be taken into the account. But the external muscles becoming irregular and debilitated by old age, in common with every other muscle of the body, are not only incapable of compensating for these losses, but cannot even perform their wonted action, and thus necessarily have considerable influence in impairing vision. Again, does not the habit of long sight so remarkable in sailors and sportsmen, who are much accustomed to view objects at a great distance, and that of short sight, as of watchmakers, seal-cutters, &c. admit of an easy solution upon this principle? as we know of no part of the body so susceptible of an habitual action as the muscular fibre.

Secondly. How are we to account for the weaker action of one eye in the case of squinting? That this is the fact

has been well ascertained; Dr. Reid* upon this subject observes, that he has examined above twenty persons who squinted, and found in all of them a defect in the sight of one eye. Porterfield and Jurin have made the same observation.

The distorted position of the eye has, I believe, been generally attributed to the external muscles; but no satisfactory reason has ever been given why the eye, directed towards an object, does not see it distinctly at the same distance as with the other. The state of the iris here cannot explain it, as it contracts and dilates in common with the other; nor can we suppose any muscles the lens might possess could have any effect, as they are not at all connected with the nature of this disease.

But the action of the external muscles, I apprehend, will afford us a satisfactory explanation. When the eye is turned from its natural direction, for example, towards the inner canthus, it is obvious that the *adductor* muscle is shortened, and its antagonist, the *abductor*, lengthened; consequently, as the abductor has not the same power of contracting itself with the adductor, when the eye is directed towards an object, their power of action being different and irregular, the compression made upon the eye and its humours must also be equally irregular, and therefore insufficient to produce the regular changes in the refraction and shape of the eye we have shown to be necessary in adapting it to the different distances of objects. The effects produced by making a partial pressure upon the eye with the finger, or *speculum oculi*, before noticed, would also appear to favour this explanation.

Thirdly. May it not in part be owing to the loss of this combined action of the external muscles, and the difficulty

* See his Inquiry into the Human Mind, page 322.

of recovering it, that the operation of couching is sometimes unsuccessful, especially when the cataract has been of long standing? This cannot be attributed to the iris, for it, perhaps, dilates and contracts as before: nor to the muscles of the lens, for they are removed; nor to the state of the nerve, for it is still sensible to light; and yet the patient cannot see objects distinctly; and it is not an uncommon circumstance, even when the operation succeeds, that the sight is slowly and gradually recovered. Instances have occurred, Mr. Bell* observes, of the sight becoming gradually better for several months after the operation.

When we have been long out of the habit of combining our muscles in almost any one action of life, as walking, dancing, or playing upon a musical instrument, we in a great measure lose the combination, and find a difficulty in recovering it, in proportion to the length of time we had been deprived of it; but the individual action of each muscle remains as before. Thus, probably, with the muscles of the eye. A variety of facts of a similar nature must present themselves to every person conversant in the science of optics, which may admit of a similar explanation.

I have thus endeavoured, first, to point out the limited action of the iris, and of consequence the insufficiency of this action for explaining vision. Secondly, to prove that the lens possesses no power of changing its form to the different distances of objects. Thirdly, that to see objects at different distances, corresponding changes of distance should be produced between the retina and the anterior part of the eye, as also in the refracting powers of the media through which the rays of light are to pass. And, fourthly, that the combined action of the external muscles is not only capable of produ-

* See his System of Surgery.

cing these effects, but that from their situation and structure they are also peculiarly adapted to produce them.

Is it not then consistent with every principle in the economy of nature and philosophy, seeing the imperfections of the principles which have hitherto been employed in explaining the phenomena in question, to adopt the one before us, until (agreeably to one of the established rules in philosophizing) other phenomena occur, by which it may be rendered either more general, or liable to objections?

I have now finished what was proposed. I have declined entering into an extensive view of the structure of the eye, or any of the general principles of optics, as those subjects have been more ably treated in the works already cited, and thus would certainly have destroyed every claim to attention, which these few pages in their present form may possibly possess; and if I should be so fortunate as to succeed in establishing the principle I have proposed, for explaining the phenomena dependent upon this more important organ of our body (if any part possesses a pre-eminence in nature,) I also hope it may, in abler hands, admit of some practical application, in alleviating the diseases to which its delicate organization so particularly exposes it.*

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* Since the above pages have been written, I have found, upon consulting some of the earliest writers, that the effects of the external muscles did not altogether escape their attention; at the same time they had no distant idea of their action: I must therefore disclaim the originality of the thought, although I had never met with it before the circumstances already noticed, of the insufficiency of the iris, had suggested it. If, however, I have succeeded in pointing out the precise action of those muscles, and its application to the general principles of vision, in which, I believe, I have never been anticipated, it will be the height of my wishes.

II.

Description and Analysis of the METEORIC STONE, *which fell at Weston, in North America, the 4th December*, 1807. *Communicated to* DAVID HOSACK M. D. &c. *by* DAVID BAILIE WARDEN, *Esquire, Consul General of the United States, at Paris.*

DESCRIPTION.

THIS aerolite presents, in general, the same characters as those hitherto examined. It is enveloped with a thin, black, and uneven crust. The mass is principally composed of a granular substance, which breaks easily: it has an earthy appearance, and a grey cinerous colour, which, in certain parts, passes to a whitish grey.

Those portions which possess this last tint, and which are as if glued in the mass, have a round form, so that they are distinguished by circular or oval spots which interrupt the general colour. Its specific gravity is about 3. 3; the sharp parts cut glass.

In observing the fractured parts of the stone, we there perceive: 1st. Particular globules which are easily detached; little cells in which they are placed, and of which the substance is like that of the stone itself, except that its grain is more compact, and its fracture smoother.

In exposing it to a strong light, we see traces of a lamellar tissue: 2d. Grains of metallic iron, which, by polish, assume a whiteness, yield to the hammer, and attract very sensibly the magnetic needle: 3d. Grains of oxyded iron of the colour of rust. 4th. Metallic particles extremely small, of a silver white colour which seem to be of iron; and this opinion is strengthened, when we recollect that the native iron

of Kamerdorf, and that of pseudo-volcanic origin, present in certain parts, a silver white colour.

I have not seen any mark of sulphurated iron, although I found it by the analysis, as will hereafter appear.

All the fragments of this stone have a magnetic property, but without polarity, and the iron, which is very visible in certain parts, is so disseminated in all others where it escapes the eye, that the property of which there is question, manifests itself even in the smallest particles isolated by trituration.

I found it even in the globulous bodies which are first mentioned.

Pieces of this stone weighed from six to even one hundred pounds.

Analysis.

Having ascertained, by preliminary essays, that this stone contained chrome, nickel, iron, manganese, lime, magnesia, silex, alumine, and sulphur; I employed the following method of separating each of these substances.

1st. One hundred grains of this stone, from which the metallic iron was isolated, by means of the magnetic needle, after being pulverised, were treated with a considerable quantity of water, through which was passed a current of oxygenated muriatic gas: by this means, the sulphur being converted into sulphuric acid, by the oxygen of the oxygenated muriatic acid, sulphats and muriats were obtained.

2d. The whole was evaporated to siccity, and treated with two parts of alkoholic potash: after fusion the mass presented a sallow colour, and its dissolution in water was of a fine yellow.

3d. The portions of the mass, which remained undissolved in water, were dissolved in an excess of muriatic acid,

and being evaporated to siccity, I separated the silex, which, after calcination, weighed forty-one grains.

4th. Into the muriatic acid was poured carbonat of potash in excess, which formed an abundant precipitate after an hour of ebullition.

5th. The liquor contained sulphat and chromat of potash; after being made acid, it was precipitated by muriat of barytes in excess, and there was obtained sulphat of barytes, corresponding to two and a third of sulphur; and saturating afterwards the excess of acid by an alkali, I obtained chromat of barytes, corresponding to three and a third of chromic acid.

6th. The precipitate, No. 4, was submitted (still in a humid state) to the action of alkoholic potash, and after filtration, the liquor gave, by means of the muriat of ammoniac, a grain of alumine.

7th. Ammoniac was poured into the remains of the precipitate, after having dissolved it in an excess of muriatic acid. The oxyds of iron and manganese were precipitated, and the lime and magnesia remained in dissolution.

8th. The precipitate was isolated, and the lime separated from the magnesia by the oxalat of ammoniac, which, after calcination, weighed three grains.

The magnesia was precipitated by caustic potash: it weighed, after desiccation, sixteen grains.

9th. The oxyds of iron and manganese were dissolved in an excess of muriatic acid, and pouring, by little and little, saturated carbonat of potash into the dissolution until red floccules were visible, and then leaving it to repose twenty-four hours, all the carbonat of iron precipitated, whilst that of the manganese remained in the liquor.

The carbonat of iron, after calcination, gave twenty-four grains of oxyd: and that of manganese, deposited by ebulli-

tion, by the same operation, only one and a third.—Which makes in all:—

Silex,	41
Sulphur,	$2\frac{1}{3}$
Chromic acid,	$2\frac{1}{3}$
Alumine,	1
Magnesia,	16
Lime,	3
Oxyd of iron,	30
Oxyd of manganese,	$1\frac{1}{3}$
Loss,	3
Total,	100

Analysis of the metallic iron isolated by the magnetic needle.—1st. One hundred parts of this stone gave twenty-eight of metallic iron, which is very brittle, owing to the nickel it contains. 2d. Forty grains of this iron were dissolved in nitro-muriatic acid, and by means of ammoniac in excess, the oxyd of iron was separated, which weighed forty-five grains. The dissolution of nickel in this alkali was evaporated to siccity to expel all the ammoniac. The oxyd of nickel was re-dissolved by muriatic acid, and precipitated by the prussiat of potash, which gave one grain of the prussiat of nickel. We may infer, from these physical characters and results of chemical analysis, that this stone is like all other meteoric stones hitherto known.

III.

An Account of the Origin and Nature of the YELLOW FEVER, *as it prevailed in the town of St. Mary's, Georgia, in the Autumn of* 1808. *In a Letter from* JAMES SEAGROVE, *Esq. Chairman of the Board of Health, to* DAVID HOSACK, M. D. *&c.**

Town of St. Mary's, in Georgia, July 20th, 1809.

Dear Sir,

YOUR letter of the 23d of November last, did not reach me until within a month; how to account for its being so long on the way I am at a loss. I received one from our friend Judge Pendleton, that has been the same time delayed.

* In offering to the public the very interesting letter of Mr. Seagrove, on the yellow fever of St. Mary's, the editors cannot refrain from accompanying it with one or two remarks. From a perusal of this letter the reader will perceive that the author was an eye witness to what he relates, and that from the facts which have come to his own knowledge, he is induced to pronounce the disease which he describes, as peculiar in its character, and of a *contagious* nature. An account of the same disease, and by the same writer, purporting to be a letter to Dr. Nicholas Bayard, was inserted in the Medical Repository, Hex. IIId. vol. 1st. p. 135. In this communication, however, not the least notice is taken of the contagious character of the disease, and every thing relative to the specific form of the disorder omitted. That the article published in the Medical Repository, was originally in substance the same as that now printed in the Register, we have the fullest assurance from the testimony of the author himself in a communication to one of the editors of this Journal. We must consequently account for the imperfect statement given by the editors of the Repository, to a wilful suppression of some of the most material parts of the letter. How far, we ask, does such conduct become the character of those who profess to be actuated by a sincere desire for truth, and that too on a subject vitally interesting to every member of the community? What value, too, it may be asked, is to be attached to the various accounts which have been published in that work, of the yellow fever as it has prevailed in different parts of our country? We can scarcely withhold the expression of our indignation at this uncandid and disingenuous conduct! But we leave the reader to his own reflections. ED.

This will account to you, for what you might have conceived a want of attention to your application. I have been much from home since I received your favour, or should have wrote ere this, giving you such information respecting the sickness that prevailed in this town last fall, as was in my power: but as I am unacquainted with medical matters, as well as the technical terms, I fear my relation of it will be but ill understood; however, I hope there will be allowance made on that score, whilst I state absolute facts.

During the spring and summer of 1808, the town of St. Mary's was, (as usual,) remarkably healthy. During the latter part of August, and part of September, there were continued heavy rains, which filled all the low and level grounds, and water lay on the surface of the earth for some time, rotting the grass, weeds, and vegetables; the water in the wells became bad and offensive to the smell: yet no change in the health of the inhabitants was observed until about the 5th of September, when one of our coasting packets between this and Savannah, called the Polly, commanded by one Fowler, arrived with two sailors sick on board, and owing to the ignorance and neglect of the health officer, Dr. Ross, and the city council, these sick men were allowed to be landed, and lodged in a family in the centre of the town. One of these men died a few hours after landing; the other lingered some little time, and also died, both of them with the same kind of disorder that afterwards proved so fatal to the inhabitants. Two persons who attended these sick, viz. James Lindsay, and a free mulatto named Sip, both died: Lindsay on the 9th September, and on the 10th the mulatto. The whole family in the lodging were taken with the same fever, and most of them died. The vessel that brought the sick seamen had been employed during the spring and summer, in transporting corn and different kinds of provisions, and was in an exceedingly foul state, so much so, that there was no remaining

on board from the smell of rotton corn, &c. The consequence was that two more of her crew died on board afterwards at Cumberland Island. The disorder spread rapidly after the death of Lindsay and Sip, and having traced its progress from its first appearance, I have no hesitation in believing and saying, that the fire was lighted by the landing of the two sailors from the before-mentioned vessel. The heavy rains, the flat situation of the place, the filthy state of the town generally, and a quantity of rotten provisions stored by a set of unprincipled speculators and strangers, for the purpose of smuggling to Florida, contributed not a little to the ready receiving and promoting the contagion; these are my candid sentiments of the commencement of the sickness.

I shall now state to you the symptoms and progress of the disorder, as far as my observation went. The unfortunate person was generally taken with a pain over the eyes, the back of the head, a pain in the back, a chill as if an ague fit was coming on; thence great oppression in the breast, with a smart fever, but the pulse not very high. The patient soon became delirious, which generally took place from five to eight hours from the first symptoms; a great difficulty in keeping the body open, or getting a passage. It appeared in several cases, that the passage from the upper to the lower part of the body was nearly closed; so that medicine had but little or no effect in clearing the bowels, or opening a passage. I knew a gentleman (in my house) to have taken upwards of one hundred grains of good calomel, and the usual quantity of jalap, frequent injections, and the warm bath, without effect, until a large blister on the pit of the stomach, and frequent rubbing with hot brandy and laudanum gave relief. You will observe by the list of cases now sent you, that several died in twenty-four or forty-eight hours from the first symptoms of the fever, and from being hearty and well. In

almost every case of death the black vomit, or bleeding at the nose and mouth, took place before the patient's decease.

The mode of treating the disorder by Dr. Turner, with whom I was intimate, and with whom I visited the sick several times every day and night, was pretty much as follows: The doctor generally recommended to the inhabitants whilst well, and afterwards, to avoid animal food as much as possible; to live low, and to avoid ardent spirits; to drink freely of lemonade as their common drink. When seized with the disorder, he generally prescribed calomel and jalap, and sometimes glauber salts, with a little tart. emet. always using every endeavour to keep the body open and cleanse the bowels. He used the warm bath, clysters and blisters; and rubbing with warm brandy and laudanum the pit of the stomach had, in several cases, a good effect. Doctor Turner was bred in Rhode-Island, and a regular, though young physician; he was the only valuable character we had in that line. But unfortunately he, like many gentlemen of your profession, would not allow (for a long while) that the disease was contagious; but poor young man, he changed his opinion before he fell himself a victim.

A monstrous quack, (our health officer,) and a Dr. Hitchcock from Connecticut, made free use of mercury, external and internal, so as to salivate all their patients. How successful they were in their practice my list will explain. Bleeding was not used to my knowledge, except that Dr. Turner bled himself when first taken; he was of a full habit and in great health. A Dr. Stowel, (who arrived near the close of the sickness,) bled a young gentleman named Hammel; both these that were bled died. Not a single instance is there of the disorder communicating out of the town, even within a mile; but it is a melancholy fact, that not a single person who caught the infection in town, and went to the country, but what died.

Thus I have detailed to you what I conceived most material and essential to your inquiries. I shall now give you some detached observations which may still further serve to elucidate the nature of this melancholy disorder.

As soon as the breath was out of the sick, the body assumed a yellow, then a purple, and after, a black colour; and in a few minutes was in a state of putrefaction. The sick (generally) recovered their senses before death, the pain and fever ceased, as I suppose, when a mortification took place. The Africans and native blacks were as subject to the disease as the whites, but it was not so fatal to them. As an instance of this I will mention how subject they were. I had no less than seven persons in my family taken with the fever, and only myself able to attend them; all the whites and my family servants being down, I sent to my plantation, thirty miles from town, and had two men and two women brought to assist, and in twenty-four hours after arrival, three of them became affected with the same fever; all of them recovered though they had it severely. I here beg leave to mention an experiment I made, and I, verily believe, with success. I had been in the habit, for some years past, of using the *eau de luce*, prepared by a French apothecary in Savannah, in the cure of the bite of the rattle snake, and in so doing have unquestionably saved the lives of five persons, when all other medical aid had failed. Seeing the cases desperate, and fearing that our doctors were not masters of the disorder, I thought I would try the eau de luce on some of my people; but I first consulted Dr. Turner, who said it could do no harm. I accordingly administered it to eight or ten negroes and a white girl, giving them from fifty to sixty drops in a wine glass of water every half hour, and continued it from eight to twelve hours, and all of them recovered. I am of opinion that this medicine, given in the early stage of the yellow fever, would have a good effect. I was absent

from the 1st to the 26th of September, and knew nothing of the sickness until I landed in town with my family; I could not then reconcile my feelings to retreat and leave so distressing a scene. The town is governed by an intendant and council, possessing ample powers, but they most shamefully neglected and abandoned their duty, without taking a single step toward relieving the sick, or stopping the spread of the contagion. Finding this the case, as the senior justice of the council, I called a meeting of the inhabitants on the 28th September, who appointed five of the citizens as a committee of health, who immediately commenced their duty; and on the morning of the 29th, reported thirty white persons and twenty-four blacks very sick with the prevailing fever. This number will appear small in such a population as New-York; until I state to you, that from a census taken a year before, the number of white persons was three hundred and fifty, of blacks one hundred and fifty, and that several of that number were absent when the sickness began. The first step of the committee was to provide a hospital, nurses, medicine, and nourishment for the indigent sick; next, to remove all that were well out of the way of the disease, as they soon discovered it could not be stopped as long as there were subjects to work on, or until cold weather came. By the 5th of October there did not remain more than one hundred white persons in town sick and well; of that number eighty-seven took the fever, so that at one time we could not muster more than ten well white men in town exclusive of some Frenchmen. And now I mention French people, I think it well to remark, that there were in town, during the whole time of the sickness, about twenty of these people, and that, not a single one of them had the fever, though the men exposed themselves by visiting and nourishing the sick. I attribute this, in a great measure, to their mode of living, and being formerly inhabitants of the French islands. They

used no animal food, lived chiefly on vegetables, drank lemonade in great quantities, made as follows: take the sour orange or lemon, peel it quite clean, cut in quarters, take out all the seeds, then put them into a vessel, put as much sugar as will make it pleasant, pour boiling water thereon and let the vessel be well covered, and stand in that condition until cold; thus prepared it is pleasant drink for the sick. The French people disapproved of mercury in any way. They saved a young lady, (after she had the black vomit,) by wrapping her up in sheets wet in warm vinegar, putting her to bed, covered over with blankets.

That you may judge of our climate, I send you extracts from my diary of the weather for two seasons during our hottest months; the cause of its not being continued during the time of the fever, was owing to the confusion we were all in, and my nephew, who attended to the thermometer, was taken with the fever and died; he had just copied the last inclosed before he was taken down. I think well to mention, that during the sickness the weather was dry, and not by any means unpleasantly hot.

The committee of health kept coffins ready made, graves dug, and buried the dead without delay; had all bedding and clothing, used by the sick, burnt: after the fever subsided, had the town cleansed as well as possible; the wells and pumps attended to; the old privies filled up and new ones made. I am persuaded, that with proper attention to cleanliness and our quarantine laws, we shall escape, at all times, the yellow fever. Our climate is nearly salubrious, (I mean St. Mary's,) we are open to the sea, are surrounded with salt water, and have the sea breeze or trade winds, with which we are visited almost every day in summer. As a proof of the health of St. Mary's, I have to mention, that I have lived here for twenty years, and have scarcely been a day sick, though I have undergone great fatigue and exposure. At the

present day I do not know of a single person of my acquaintance in town or in the country, for twenty miles around, that is sick or complaining.

I think that by the time you have read thus far of my unconnected scrawl, you will be tired. I shall therefore close it by referring you for further information, to the different enclosures; and by requesting, as a particular favour, that you will indulge me with your opinion of the sickness alluded to, and should you publish a book on fevers, which I understand you intend, you will confer a favour on me, and render a service to the inhabitants of this remote country.

With sentiments of respect, I remain

Your humble servant,

JAS. SEAGROVE.

DR. HOSACK.

IV.

OBSERVATIONS *on* MERCURY: *embracing its Medical History and its abuse as an article of the Materia Medica. By* JOHN W. FRANCIS, M. D. *Fellow of the College of Physicians and Surgeons of New-York, Member of the New-York Historical Society, &c.*

THE general properties of mercury, as found in a native state, and its various combinations with other substances, being generally detailed at some length in the several works on chemistry and mineralogy, all that the writer intends, on the present occasion, is, to offer a concise view of its medical history, and to consider the abuse of this powerful remedy as an article of the materia medica.

From the sacred volume may be derived considerable information, relative to the state of chemical knowledge, in the earliest ages of society. Numerous passages there

occur in which notice is taken of gold, silver, copper, iron, lead, and tin; and from other parts it may be inferred, that they were not altogether ignorant of several of the more obvious applications of chemistry to the arts.* Of mercury, however, no mention is made; and at what particular period the first knowledge of this metal may be dated, or the time in which it was originally employed in the treatment of diseases, remains uncertain. In the writings of Hippocrates, frequent mention is made of several metallic ores, but the name of mercury does not occur: hence it may be concluded, that in his time it was not considered an article of the materia medica, as the employment of so active a remedy could scarcely have escaped the notice of so intelligent and profound an observer. Aristotle, however, who flourished about forty years after Hippocrates, and Theophrastus, his most distinguished pupil, were acquainted with it. The former, treating of the peculiar character of bodies, in Lib. IV. Meteorologicorum, notices mercury;† and the latter, in his History of Stones, states that it has its uses, and details a process for obtaining it pure from native cinnabar.‡ Theophrastus also states, that Callias, an Athenian, invented a process for making factitious cinnabar, about three hundred and fifty years before Christ.‖ This appears to have been the first artificial preparation of this metal. Dioscorides, whose fondness for the products of the vegetable kingdom led him to hold in little estimation those of the mi-

* See also Lucretius de Rerum natura, vol. 2. lib. v. with Good's Notes.

† Απηκτα δε, οσα μη ἐχει ὑγροτητα ὑδατωδη μηδ' ὑδατος εστιν, αλλα πλειον θερμου και γης, οιον μιλη και γλευκος· ὡσπερ ζιοντα γαρ εστι και ὁσα ὑδατος μεν ἐχει, ἐστι δε πλειον αἰρος, ὡσπερ το ἐλαιον, και ἀργυρος χυτος, και ει τι γλισχρον, οιον ἰξος και πισσα. Aristot. Oper. vol. 1. p. 816. ed. 1597.

‡ Theophrastus, de Lapid. p. 232. Trans. by Hill.

‖ Ibid. p. 236.

neral, ascribes pernicious effects to it in medicine ;* and the elder Pliny, under the appellation of the vomica liquoris æterni, declares that it has the quality of poisoning all things.† These opinions of the nature of mercury, entertained by Dioscorides and Pliny, no doubt influenced Galen to consider it highly corrosive, and rank it among the class of poisons, for it does not appear that he ever made trial of it himself.‡

Notwithstanding the authors already mentioned had thus decidedly spoken of the destructive effects of mercury, and that their writings were already extensively circulated among the Arabians, who embraced with great zeal the then prevailing Galenical doctrines, yet some of the most distinguished physicians of the Arabian school were among the foremost of those who dared to call in question their correctness in this respect. Believing this metal to be not merely harmless, but calculated to do much good in the treatment of diseases, they recommended its use externally ;§ and in the form of ointment, united with various ingredients, it was employed in cutaneous affections, as herpes, impetigo, psora, &c. Shortly after this period, Rhazes and Avicenna having observed that even when inwardly taken it caused no injurious effects, and that by its weight it made a free passage through the body,‖ the

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* Vim pernicialem habet, suo enim pondere interna perrodit. Dioscorides, lib. v. as quoted in Alston's Mat. Medica, vol. 1.

† Est et lapis in his venis, cujus vomica liquoris æterni, argentum vivum appellatur, *venenum rerum omnium*. *Plinii*, lib. xxxiii. cap. vi. p. 702.

‡ *Hydragyros, argentum vivum.* Non est sponte nascentibus medicamentis, sed ex iis quæ parantur ; veluti psimmythium, ærugo, psoricum, lithargyros. Cæterum interimatne, deuorarum aut admotum extrinsecus *nondum feci periculum*. *Galeni de Simp. Med. Facul.* lib. ix. p. 553. See also the *Pharmacologia Anti-Empirica of Harris*, p. 94.

§ Primi omnium medici Arabes ausi sint mercurium exterius adhibere. *Astruc. de Morb. Ven.* 4to. vol. 1. p. 156.

‖ Argentum vivum plurimi qui bibunt, non læduntur eo ; egreditur enim cum dispositione sua per inferiorem regionem. *Avicen.* tom ii. lib. iv. p. 200, ed. 1595.

practice now became, to give it in the quantity of pounds in affections of the intestinal canal and in cases of difficult labour; little attention being bestowed to find out the particular cause of this disease. Joannes de Vigo is, by some writers,* supposed to have been the first who has mentioned any pharmaceutical preparation of this metal for internal exhibition. It was called a red precipitate, and such he has represented its efficacy to have been in disorders of the intestinal canal, that he distinguished it by the name, "mirabilis et egregia medicina."† But this pompous appellation was not sufficient to bring his nostrum into general use. It was universally condemned by the physicians of his time, and soon gave place to the famous pills of Barbarossa, which were a combination made up chiefly of quicksilver, rhubarb, aloes, and musk.‡

Matthiolus and Brassavolus gave this metal to children affected with worms, in doses from two to twenty grains, and always, it is stated, with some success. In cases of difficult parturition, it was administered with the same result. Similar facts are still farther supported by Fallopius and Fernelius, the latter of whom has witnessed pounds of crude mercury given to induce abortion.§ Equally large doses were administered in the iliac passion.

The external use of mercury, in the mean time, was not neglected, either by the Arabians, or by others who became reconciled to the opinion of its salutary tendency. On the authority of Dr. Freind,‖ it is declared, that friar Theoderic

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* Luisinus, Barry, and others.

† Med. Trans. of the College of Physicians of London, vol. i. p. 147.

‡ Luisini Aphrodisiacus, p. 946.

§ Vidi mulieres qui libras ejus biberunt ut abortum facerent, et sine noxa. Ego exhibeo in vermibus puerorum et nullum parit symptomata, solum necantur vermes. *Fernelius. Alston's Mat. Med.* vol. 1.

‖ History of Physic, vol. 2. p. 361. Alston's Mat. Med. vol. 2. p. 361.

induced by his unguents so profuse a salivation, that the "humours flowed like a river," which was considered a certain evidence of its successful employment; and this appears to have been not unfrequently the practice of that time. Thus it appears evident, that at that early period, there were three distinct and powerful sects who entertained different ideas with regard to the medical virtues of this metal: those who were decidedly opposed to the introduction of mercury as an article of the materia medica; others, again, who, though they admitted its salutary operation in disease, yet confined its use solely in external applications; and a third class, who were the strenuous advocates for its liberal use internally.

About the time that the Arabian physicians first noticed the effects of mercury as an article of medicine, what may be called the golden age of alchemy had already commenced, and of the many subjects of examination to which the philosophers of that sect directed their attention, and of which they conceived the greatest hopes, the most conspicuous was mercury. Geber appears to have been among the foremost of those who imbibed this notion, which was subsequently adopted and maintained by the celebrated Roger Bacon in the thirteenth century. Believing it to be the basis and matter of all metals,* that by subtilizing, purifying, and digesting it, it might be converted into pure gold, they subjected it to every practicable process, in the visionary researches after the philosopher's stone.† The successful employment

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* Sperma metallorum, says Harris. *Parm. Anti-Empir.* p. 93.

† Si medicamentis relictis progredior ad alchymiam: in hujus asseclarum tantum, non omnium ore crepat quotidie mercurius, dum alii in illo veram lapidis philosophici materiam hærere credunt alii, ad minimum in metallorum arte transmutatoria felicem eventum sibi promittunt: imo, quod non negandum, e plurimis talia tentantibus uni alterique aliquando licet esse tam felici, ut quod optat obtineat, quod Theoph. Paracelsi, et aliorum exempla evincunt. *Acta Erudit.* Dec. II.

of this metal by the chemists and Arabian physicians, and its introduction in the treatment of lues venerea, in 1497,* afforded still farther inducements to them to extend their investigations; and by the bold and vigorous use of it, in conjunction with opium, Paracelsus and Van Helmont, in the sixteenth century, made known a practice far more successful than that of their predecessors, and effected cures altogether beyond the power of the Galenical schools.

Passing over the contentions relative to mercury which existed among the chemists and Galenists, it may be sufficient to observe, that with the prevalence of that class of diseases vaguely denominated leprous, and the extension of the lues venerea, the use of this remedy became gradually more extensive, and was considered among the most valuable as well as active articles of the materia medica. The variety of opinion relative to it, which agitated the writers of the seventeenth and eighteenth centuries, have a more immediate connection with the advantages of certain preparations, and the theory of their operation. Of these authors, the most conspicuous were Hoffman, Sydenham, Boerhaave, and Van Swieten; beside several other writers of lesser note.† It ought not to be left unnoticed in the history of this medicine, that the facetious Dr. Dover, believing it to be a valuable remedy in affections of the stomach and in other diseases, warmly recommended its use in a crude state. To take an ounce of quicksilver every morning he declared to be the most beneficial thing in the world; and in 1731 and 32, it

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anno viii. p. 339. Omnia autum metella sunt ab argento vivo creata: et cum illo omnia resolvuntur, et in sulphur convertuntur. *Joan. Benedic. Luisinus de Morb. Gal.* c. iv. p. 175.

* Sprengel. Cabanis' Sketch of Medical Science, p. 416.

† See the Acta Eruditor. also Acta Curiosor. and the Ephemer. Natur. Curiosorum.

became "fashionable" in London and in Edinburgh to take that quantity every morning for several weeks.*

The medical history of mercury closes with its extensive use in the diseases of warm climates; more particularly in the malignant fevers of the tropics, as introduced by Dr. Chisholm,† and the practice subsequently adopted by the North American physicians.‡

Having given some account of the medical history of mercury, before proceeding to notice its general and indiscriminate use as an article of the materia medica, and the consequent morbid effects of which it is productive, some few observations may be introduced relative to its action upon those individuals who employ it in the various mechanical arts, or who are themselves engaged in the working of mercurial mines.

Among the earliest authors who have bestowed particular attention on this subject, were George Agricola, who noticed the destructive effects of mercury on the human constitution in his elaborate work on metallurgy, and Johannes Francis Fernelius, a contemporary writer, in his treatise on lues venerea, whose respective productions appeared in the early part of the sixteenth century. The former author dwells particularly on the manner of obviating the pernicious consequences which may occur to the body from mercurial exhalations.§ The latter, among other facts of a similar nature, makes known the case of a goldsmith, who, upon imprudently exposing himself to the vapour of quicksilver, "be-

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* Edin. Med. Essays and Observ. vol. 3. p. 347. Cullen's Mat. Medica, vol. 2, p. 250.

† Essay on the Malignant Pestilential Fever.

‡ Rush's Works. Mitchill and Miller's Medical Repository. Miller's Retrospect of the Eighteenth Century.

§ De Re Metallica, lib. ix. p. 344. ed. 1621.

came stupid, lethargic, and quite dumb."* Like to this is the declaration of Boyle, who observes that death has been occasioned from the same cause.† Besides these authors may be mentioned the Jesuit Acosta,‡ Fabricius Hildanus,§ and Bernadin Ramazzani.‖ Among the consequences attendant on those who work in mercury, or are exposed to its fumes, Hoffman states palsies, apoplexies, epilepsies, hectic fever, &c.** Paulus Zaccheus, in his legal medicine, enters at length into the consideration of the effects of mercury in its native state; and not only declares his own opinion of their pernicious nature, but adduces arguments in confirmation, from some of the early Arabian writers, and enumerates the diseases caused by the fumes of this metal; he adds, *the same Avicenna declares.*†† "M. Jussiau," says Dr. Alley, "in a paper on the working of the quicksilver mines of Almaden, in Spain, published in 1719, mentions the appearance of pustules over the whole body as a consequence of a contact with the mineral, even in its metallic state, together with tumours of the parotids, aphthæ, and salivations."‡‡

To the authors already mentioned might be added many others of more modern date, whose declarations coincide with what has been just advanced; but a general reference to their works must suffice. See the respective publications

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* Fernelius de Lue Vener. p. 590. Alston's Mat. Med. vol. 1. p. 80.

† Works, vol. 3. p. 330. fol. ed. 1744.

‡ Discourse of Quicksiluer, of the Mynes and Worke, and what is requisite for that subject. Purchase his Pilgrimes, vol. 3, p. 947-8.

§ Observat. et Curat. Chirurg. cent. v.

‖ De Morbis Artific. p. 491.

** Dissert. Metallurg. morbif. Rational. Systemat. vol. 2. ed. 1729.

†† Utidem Avicenna testatur. *Quæst. Medico-legal.* lib. xi. p. 212. ed. 1688. Ejus vapor facit decidere paralysim. *Avicen.* vol. 1. lib. ii. p. 267.

‡‡ Observat. on Hydrargyria, p. iv.

of Dr. Mead,* M. Sauvages,† Dr. Brown,‡ Keysler,§ and the Abbe Raynal.‖

The writer cannot, however, forbear to introduce on this subject, the remarks of Professor Gmelin, of Goettingen, as contained in his Apparatus Medicaminum, a recent performance of the German press. They are the result of extensive examination, and possess additional claims to attention from the authorities he has adduced in support of their correctness. "Neque dubius est mercurii in nervos effectus, funestus omnino, ut ea certe forma veneni nomine dignissimus sit, si halitus specie per nares et os corpus ingrediatur, ita ut non tremores modo artuum experiantur, v. gr. metallici, qui in fodinis, in quibus mercurius virgineus occurrit, operantur: chirurgi qui in mercurio per frictionem adplicando desudant, et ii qui, e. g. in officinis venetis mercurii cum stanno mistura vitri superficiem illinunt, sed alii quoque artifices, qui sergentibus ex igne mercurii vaporibus sese exponunt, potissimum aurifabri, qui in deaurandis ignis auxilio aliis metallis versantur, tum asthmati, tum paralysi artuum, et apoplexiæ præsertim valde sint obnoxii, neque rara adeo sint exempla hominum, ab inspiratis exitiosis his halitibus mortem repentinam obeuntium."**

The preceding opinion relative to the destructive effects resulting from the fumes of mercury, though grounded upon such weighty testimony, has been rejected by a late and eminent writer, the Baron de Humboldt; who attributes the pernicious consequences which ensue from the working of mines of that metal, to the excessive labour the individuals

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* Medical Works, vol. 1. p. 106.
† Nosolog. Method. vol. 1. p. 558. ed. 1768.
‡ Travels, Harris' Collect. ed. 1748. vol. 2. p. 784.
§ Travels through Germany, &c. vol. 4.
‖ East and West-Indies, vol. 3. p. 144.
** Apparat. Medicam. (*regnum minerale complectens.*) vol. 2. p. 22.

engaged in this employment undergo. "From five to six thousand persons," says he, "are employed in the amalgamation of the minerals, or the preparatory labour. A great number of these individuals pass their lives in walking barefooted over heaps of brayed metal, moistened and mixed with muriate of soda, sulphate of iron, and oxide of mercury, by the contact of the atmosphere and the solar rays. It is a remarkable phenomenon to see *these men enjoy the most perfect health.*"* He also declares, that a part of the inhabitants, at Guanaxuato, drink the very water in which the amalgamation has been purified without feeling any injury from it.

There is no doubt that certain circumstances are required to induce the morbid operation of mercury, even in this state, but these circumstances are of the very nature of those observed by the Baron himself. It is requisite that the metal undergo a minute subdivision, in order to exercise a pernicious tendency upon the body, and that the body itself possess a certain predisposition; a principle declared by Hoffman, and ably illustrated by that distinguished medical philosopher.† In corroboration of this remark, may be stated the very recent occurrence which took place on board two vessels, the Triumph and Phipps, in which, from the fumes of quicksilver, an alarming illness broke out among the crews, all of whom were more or less salivated.‡ Reasoning from analogy, a like conclusion may be drawn from the effects of other metallic ores.§ The facts, too, observed by Robert Boyle,‖ which are diametrically opposed to the

* Political Essay on the Kingdom of New-Spain, vol. 1. p. 127. Lond. 1810.
† Rational. Systemat. Dissert. Metal. vol. 2.
‡ Edin. Med. and Surg. Journal, vol. 6. p. 513.
§ See Franklin's Letter to Vaughan, Works, vol. 3. p. 398. Phil. 1808.
‖ Boyle on the strange subtility of Effluvium. Works, fol. ed. vol. 3. p. 317.

latter declaration of Humboldt, might be here added, had not this part of the subject already been extended to too great a length. It remains with the reader to decide, whether the evidence advanced affords a sufficient refutation of the observations of the Baron.

The materia medica contains not an article in the employment of which there are more circumstances deserving consideration, than those connected with or attendant upon the use of mercury. This remark with nearly equal force applies to all the various forms in which this powerful remedy is, at the present day, administered; and he who ventures to depend upon the successful operation of this medicine, without a due regard to the age, sex, and particular constitution of the patient; the diagnostic symptoms and stage of the disease; the previous treatment that may have been pursued; climate, and temperature; will not only subject himself to frequent disappointments, and hazard the safety of his patient, but most deservedly become the object of severe crimination. The whole history of mercury, in the numerous and complicated diseases in which it is employed, justifies the correctness of this assertion; and would it not far exceed the limits proper for this place, abundant evidence, derived from unquestionable sources, might be here detailed.

Mercury, when taken into the system in considerable quantity, either through the mouth or by absorption from the surface, acts with peculiar force upon the stomach, inducing indigestion, loss of appetite, nausea, and vomiting; the functions of the chylopoietic viscera become greatly disturbed, especially those of the liver; and from its very powerful effects upon the digestive organs, the whole intestinal canal soon participates in the disorder. It exerts a no less powerful influence upon all the secretory and excretory vessels of the body, as in those of the mouth and fauces, trachea,

bronchiæ, and lungs, and not unlike the preparations of antimony, paralyses the action of the minute and distant vessels, especially those of the lymphatics. From this most general operation, a languor of the whole system is produced, the constitution at large becomes affected, and symptoms highly indicative of general derangement and nervous irritability ensue. These effects, however, are much more readily induced in particular individuals or habits of body than in others; and as remarked before, an intimate relation exists between the operation of this medicine, and the age, sex, constitution of the patient, temperature, &c.

A small dose of calomel, given in the infantile state, has been followed by convulsions, and sanguineous discharges from the alimentary canal.* In some instances, the same preparation of mercury, in small doses, has excited a preternatural action of the blood-vessels, and hæmorrhage from the lungs; thus predisposing to consumption, and ending in that disease; and in females of delicate habit, violent menorrhagia. In certain constitutions it has given rise to symptoms characteristic of dysentery, which have been succeeded by a colliquative and fatal diarrhœa. Examples, too, are not wanting, of a most profuse salivation, followed by extreme weakness and great prostration of strength, being attendant upon the exhibition of but a few grains of this medicine. Indeed, Dr. Ferriar relates the case of a maniac, to whom even half a grain of calomel proved a full dose.† Its peculiar effects upon the minute and distant vessels of the absorbent system, depending either upon the excitement induced, or upon the debility consequent thereon, are fully apparent when the kinds of diseases which it occasions are considered; such

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* MS. Notes of Hosack's Lectures on the Mat. Med.

† Med. Hist. and Reflect. vol. 3. p. 56. See also Pearson on the effects of various articles in the cure of the Lues Venerea, p. xix.

as the several forms of dropsy, hydrocephalus, hydrothorax, and anasarca, and various affections of the lymphatic and glandular system; and when this principle of its action is considered in its full force, little doubt need be entertained, that of the numerous causes which have been assigned for the preternatural decay of teeth, mercury may be justly reckoned a principal one.*

To these more ordinary ill effects attendant upon the frequent and indiscriminate use of mercury, may be added the numerous disorders which it induces of the nervous system, and of the intellectual functions; as, among the former, tremors, convulsions, epilepsy, palsy, &c. A remarkable instance of this last disease is related by Professor Hosack, as having occurred in a child of this city, who, from the abuse of this remedy, was altogether deprived of the use of its limbs.† Of the derangements of the intellectual system, might be mentioned the various affections of the mind, from a state of vigilance to perfect mania; and not uncommonly an impaired state or total deprivation of one or more of the senses, as loss of sight, loss of memory, loss of voice, and deafness. In the case just noticed, so powerful were the effects of mercury on the memory, that the child, although able to read previous to its employment, was compelled to learn anew the letters of the alphabet. But these facts, though of the greatest value, possess little claim to novelty. Many of them were noticed by practical observers, soon after the introduction of this mineral as an article of medicine; and at the present day, as the importance of the subject has become more manifest, it has deservedly acquired a proportionably greater degree of attention. But without further enlarging, in this general manner, the catalogue of ills which originate

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* See also Fox on Diseases of the Teeth, p. 108.

† MS. Notes of Lectures on the Mat. Med.

from the abuse of mercury, it will probably be attended with more practical advantage to consider the present fashionable employment of this remedy in the treatment of particular diseases; and, for reasons which must appear obvious, these remarks are necessarily confined more especially to the practice pursued by the physicians of our own country. And first, of some of the diseases belonging to the class denominated febrile.

To the bold and vigorous practice adopted by the celebrated Dr. Chisholm, in the cure of the malignant pestilential or yellow fever which prevailed at Grenada, and at other of the West-India islands, in 1793, may be attributed the present general employment of mercury in the treatment of all the various forms of intermittent, remittent, and typhus fever in the United States. This remedy, it is well known, was long before that time made use of, and often to a considerable extent, in the treatment of the febrile diseases of hot climates, and also in some diseases of a like nature which prevailed in this country. Dr. Warren, in his treatise, published in 1740, animadverts on the practice of giving calomel in inflammatory fevers.* Dr. Gilchrist, shortly after that period, expresses a high opinion of the superior virtues of mercury in the low state of fever, during the existence of inflammation.† Dr. Wright employed it in the acute diseases of Jamaica, in 1764; and the same remedy was resorted to by Dr. Chisholm himself, in the cure of the yellow remitting fever which prevailed at Grenada in 1786.‡ In our own country, during the existence of the sore-throat distemper, about the year 1740, (a disease in some respects precisely of the nature of the malignant yellow fever, according

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* Treatise on the Malignant Fever of Barbadoes.

† Edin. Essays and Observ. Physical and Literary, vol. 3. p. 498.

‡ Duncan's Med. Comment. Dec. ii. vol. 1. and 8.

to Dr. Chisholm,) frequent recourse was had to this medicine, and in no small quantities, by Dr. Ogden, of Long-Island.*

But though the *remedy* introduced in Grenada in 1793, was by no means new in the treatment of other disorders, to which the malignant pestilential fever, in many particulars, bore a strong resemblance, yet to Dr. Chisholm exclusively belongs the credit of being the first who adopted the novel practice of exhibiting mercury to the great extent it is now employed in this disease; a practice to which he was led from the ineffectual result of every other remedy, and from the appearances he perceived in the two first bodies he opened. In some cases, mercury, in the form of calomel, was given to an almost incredible extent; frequently to the amount of four hundred grains; and during the existence of the same epidemic in subsequent years, sometimes no less than eight hundred, and at other times upwards of one thousand grains were employed. But the success of this practice, says Dr. Chisholm, "justified my temerity:" and his future experience and observation produced the fullest conviction of its efficacy. An extraordinary instance of the effects of mercury, in the treatment of the *yellow remitting fever*, may be here noticed: before any very material change took place in the state of the patient, "he had taken," says Dr. C. "sixty-four grains of calomel by the mouth; thirty-four drachms, or two thousand and forty grains, were administered by clyster; and sixteen ounces of the strongest mercurial ointment, or about three thousand six hundred grains of triturated mercury, were carefully rubbed into his arms and thighs; in all, five thousand seven hundred and four grains, in the course of five days. His recovery was astonishingly rapid after the favourable change was effect-

* Mitchill and Miller's Med. Rep. vol. 5. p. 98.

ed."* We cannot here enlarge upon the many circumstances, which, in the opinion of Dr. Chisholm, so loudly called for such active treatment. Whether the malignant fever, which he has so happily described, be a disease of a specific form, and in its nature contagious, or whether it be only the ordinary remittent of temperate climates, are questions which have been discussed in all the bitterness of controversy. One cannot but lament that on a subject so deeply affecting the public interest, more deference had not been paid to the opinions of those who from education, talents, and the most ample opportunities of personal experience, were eminently qualified to decide. Science disdains the spirit of party, and philosophy herself weeps at the madness of sectarians.

Every consideration conspires to induce the fullest belief, that the mercurial practice was adopted by Dr. Chisholm from the most laudable motives; and the Essay which he has offered to the world, while it affords a luminous and faithful exhibition of the ravages committed by a dreadful pestilence, and of the means employed to arrest its progress, presents the most unquestionable evidence of superior intellect, united to a heart equally alive to every ennobling sentiment, and zealous for the best interests of human kind.

This digression on the practice of Dr. Chisholm seemed proper and necessary; as, upon the appearance of the yellow fever, in the same year, in the city of Philadelphia, though depletion by the lancet constituted a chief part of the method of cure, the mercurial plan of treatment was also adopted. During the prevalence of the same epidemic in 1794, in New-Haven, Philadelphia, and Baltimore, the application of this remedy became more general, particularly in the last mentioned city; not, however, without calling forth the animadversions of some, who contended that the principles upon

* Essay on the Malignant Pestilential Fever, vol. 1. p. 476.

which it was administered were erroneous, and the practice itself pregnant with mischief. But the nature of the present performance forbids farther minuteness. Let it suffice to observe, that upon the re-appearance of the yellow fever in the various parts of the United States, at every subsequent period, many eminent practitioners had immediate recourse to the mercurial method, which was pursued until salivation was excited, a practice upon which they placed their chief reliance; while, on the other hand, no inconsiderable number of medical men, of great professional reputation, adopted it but partially, and with great reluctance, or indeed rejected it altogether.*

As to the *success* attendant upon the mercurial practice in the yellow fever of this country, whatever it might have been in comparison with that resulting from any other method of treatment, it is abundantly evident, from the mortality which occurred, that in this respect here, as well as in the malignant fever of the West-Indies, much room was left for improvement.

The utility of the free employment of mercury in the treatment of the yellow fever of the United States, may be well doubted; chiefly for the following reasons:

First. The climate of this country is singularly unfavourable to the salutary operation of this medicine. The fre-

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* See Professor Rush's several histories of the Bilious Yellow Fever in Philadelphia, in Med. Inq. and Obser. vol. 3 and 4. Drysdale's account of the yellow fever of Baltimore in 1794, in Coxe's Medical Museum, vol. 1. Monson on the yellow fever of New-Haven in 1794, in Webster's Collection of Papers on the Bilious Fever. Smith's letters to Dr. Buel on the yellow fever of New-York, in ditto. Bayley on the epidemic fever of New-York in 1795. Hosack on the yellow fever of New-York, in 1798 and 1799, in Currie's Sketch of the Yellow Fever of Philadelphia in 1799. Rand on the epidemic of Boston in 1798, in the Med. Repos. vol. 2. Caldwell on the yellow fever of Philadelphia, in 1803 and 1805. Currie's respective publications on the synochus icteroides. Wheaton on the yellow fever of Providence, R. I. in Med. Repos. vol. 10. and other papers by different American writers, in the same Journal.

quent and uncertain transitions of the weather from heat to cold, from dryness to humidity, while they are often the cause of sudden and violent diseases, which generally assume the inflammatory character, they give the body a certain morbid predisposition, that renders it unable to withstand the influence of a mercurial course, which on the native of a more southern and temperate atmosphere, would at least prove not injurious, and probably successful. However numerous and contradictory the reasons assigned by pathologists may be, the fact itself cannot be questioned; though it does not seem to have been duly regarded by those who were desirous of establishing in this country the practice of the West-Indian physicians.

Secondly. The morbid appearances, as they are exhibited upon the dissection of individuals who have died of the yellow fever in different parts of the United States, during its prevalence in different years, furnish another argument against the extensive employment of mercury in this disease. As it is universally admitted that this remedy is a powerful deobstruent, and indicated in all cases of local congestion, particularly of the glandular system; from a supposition that this part of the body was especially affected, implicit recourse was had to mercury. But while the liver appears to be the most diseased organ in those who die of yellow fever in the West-Indies, as Dr. Chisholm and others have declared,* this important viscus seems to be in a remarkable degree exempt from derangement, in those who have died of the same disease in this country. Such was found to be the case, in the fever of Philadelphia in 1793, by Doctors Physic and Cathrall;† in those who died of the yellow fever in

* Essay on the Malig. Pest. Fever, vol. 1. p. 351.

† Rush's Med. Inq. and Observ. vol. 3. p. 174. Cathrall's Sketch of the Synochus Maligna, p. 70.

New-Haven in 1794, as remarked by Dr. Monson;* in the fever of the same year in Philadelphia, and in that of 1798, according to Dr. Rush;† and again, from the dissections made in the same city in the epidemic of 1805, as made known by Dr. Caldwell;‡ and by Dr. Lowber, in the Pennsylvania hospital.§ Exceptions, however, occurred in the yellow fever of Boston in 1798.‖

As dissections thus show that congestion or infarction of the liver is of rare occurrence in the yellow fever of this country, mercury, therefore, is seldom serviceable on account of its specific action on the hepatic system; and the impropriety of inducing salivation as a general remedy to remove glandular obstructions, which rarely take place, upon the principle that they constitute the proximate cause of the disease, is too striking to be overlooked. But there are other circumstances which more directly contra-indicate the indiscriminate use of this remedy in yellow fever. The very nature and seat of the disease, as they are characterized by symptoms which uniformly accompany it, and by numerous dissections, establish the fact, that the brain and nervous system are primarily affected; that great disorganization constantly occurs in the digestive organs, the stomach and duodenum commonly exhibiting marks of high inflammation, and approaching sphacelus, and at other times appearances similar to those which ensue from the action of the most narcotic poisons;** and that not unfrequently the same morbid effects extend throughout the whole intestinal canal. Besides this,

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* Webster's Collection on Bilious Fevers, p. 189.

† Med. Inq. and Observ. vol. 3. p. 371. vol. 4. p. 77.

‡ Essay on the Pestilential or Yellow Fever of Philadelphia in 1805, p. 100.

§ Phil. Med. Museum, vol. 5. p. 16.

‖ Rand and Warren's Account, Med. Rep. vol. 2. p. 240.

** See also Miller's Observations on that form of Pestilence called Yellow Fever. Med. Rep. vol. 2. p. 379.

let the reciprocal action of the brain and of the digestive organs on each other be considered, and the intimate connection which exists between local disease and the disorders of the whole system, as the phenomena resulting from them are particularly evident in yellow fever, and the position before advanced receives strong additional support.

It is scarcely necessary to remark, that mercury seldom fails to weaken the constitution, and always to impair the digestive functions of those even who in these respects are in a sound state. How then is it practicable, by the use of calomel, to diminish those acute pains in the gastric region, or to allay that extreme irritability of the stomach, which are the concomitants of yellow fever? The suggestions of reason are confirmed by experience. These symptoms, instead of being removed, are greatly aggravated, and while the acute gastric affection becomes still more violent, an excessive vomiting is induced, which in many cases terminates but with the life of the patient. The observations of the venerable Dr. S. Bard and of Dr. Hosack, of New-York, of Dr. Currie, of Philadelphia, of Dr. Chatard, of Baltimore, and of Dr. Wheaton, of Providence, during the prevalence of this disease in those respective places, are directly in support of this fact.

But it is declared that the success of the mercurial practice depends upon salivation, and the recovery of the patient has been pronounced to be certain whenever this effect of mercury was perceived to take place. As, however, inflammatory symptoms in numerous instances constitute the first stage of yellow fever, when the peculiar operation of mercury during their predominance is considered, and the impracticability of exciting salivation, it must be acknowledged that this remedy is but ill calculated to mitigate the violence, or to arrest the progress of the disease. Equally apparent is it, that in the more advanced stage of the complaint, when

the more formidable and alarming symptoms have already taken place, a reliance upon mercury will be attended with disappointment. The great prostration of strength under which the patient now labours forbids recourse to a medicine the action of which is so powerfully debilitating; the rapid termination of the disease sets at defiance the slow and uncertain accomplishment of salivation.

There is yet another argument which remains to be considered, which cannot but still more strongly confirm the doubts concerning the propriety of depending upon the action of the salivary glands as a remedy for yellow fever. Salivation, even in those cases in which it is produced, does not invariably secure the safety of the patient. It were an easy matter to adduce a number of instances in support of this fact, some of which fell under the observation of Dr. Hosack, in which, though salivation had been brought on by mercury, it did not prevent the fatal termination of the disease, nor was its beneficial effects manifested by any alleviation of the symptoms.

Having thus examined, with as much brevity as the importance of the subject admits, the claims which mercury is said to possess in the treatment of the yellow fever of the United States, and attempted to show from a rigorous examination, that they are not only altogether unfounded, but that the remedy itself, employed in the manner recommended, is highly inimical to the constitution, perhaps it is incumbent on the writer to state a preferable practice. This, however, formed no part of the plan he originally proposed, neither does he consider himself competent to so responsible an undertaking. Yet if it be allowable for him to offer his ideas on this subject, he does not hesitate to declare, from the limited opportunities of observation which he has had, and from the experience of many distinguished practitioners, that what may be denominated the *sudorific* plan, appears to be

by far the most successful. After the necessary evacuations from the stomach and bowels by mild purgatives, and in some instances from the blood vessels, by the moderate use of the lancet, the administration of those remedies which relax the surface of the body, and promote the cuticular discharges, are particularly indicated; these kept up for some time, are found to be the most efficient means in the cure of yellow fever.*

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* The following observations contained in a letter from Dr. Hosack to Dr. Currie, dated March, 1800, and published in Dr. Currie's Sketch of the Yellow Fever, as it prevailed in Philadelphia in 1799, strikingly evince the pernicious tendency of the mercurial treatment in this disease.

"Having been actively employed in the yellow fever of 1798 and 1799, I had an opportunity of pursuing this mode of treatment, (the sudorific,) upon an extensive scale, and am prepared to bear the most unequivocal testimony in its favour. In the year 1798, Dr. Samuel Bard and myself visited and attended about five hundred and fifty patients with this disease: of this number we lost between sixty and seventy. In 1799, I attended ninety-eight persons, and lost twelve. Although the fatality of 1799 is nearly in the same proportion with that of 1798, there is a very material difference as it regards the practice we pursued and the condition of the patients in those different years. In 1798 we lost many persons of great respectability, and who were so situated as to obtain every comfort which sickness requires. In 1799, except those I visited in consultation with other physicians, which cases are not included in the list of my patients, I did not lose more than four where they had the advantages of good nursing, comfortable lodging, and pure air. In 1798, upon receiving the Narrative of Bryce on Yellow Fever, in addition to the testimonies of Dr. Rush, Dr. Chisholm and others, in favour of mercury, both Dr. Bard and myself resolved to employ it with the expectation that it would prove a valuable auxiliary to the practice we then pursued. We accordingly employed it agreeably to the plan recommended by those gentlemen. We gave it in the first instance with a view to its purgative effects, in doses of ten grains: afterwards continued it as an alterative, in doses of two grains, and in many instances in conjunction with opium, to secure, if possible, its operation upon the salivary glands. In this manner we administered it to our patients for the space of a fortnight; but that fortnight was a fatal period in our practice. During that short space of time nearly forty of our patients fell victims to this mode of treatment. In every case wherein it proved fatal, it appeared to produce its effects by the irritation it excited in the stomach. For I rarely introduced mercury in the yellow fever where it did not excite vomiting, or at least such a degree of nausea as prevented the stomach from receiving a sufficient quantity of drink to operate upon the secretions; but in many instances vomiting was induced by the first dose

The *abuse* of mercury, as before remarked, is not confined to the treatment of the yellow fever. Very general recourse is now had to the same remedy for the cure of all the various forms of *intermittent* and *remittent fever* which prevail in different parts of our country, and for every variety or type of fever, from the *purest inflammatory* to the *lowest grade of typhus*. Upon whatever principles of pathology the practice is attempted to be maintained, and however specious the reasoning which is offered in support of such empiricism, the fact itself is indubitable, and too singular to pass over without animadversion. There is a fashion in medicine as well as in other professions, and the most vigorous and cultivated mind not unfrequently becomes enamoured of its own speculations: on the depraved and the illiterate the influence of absurd hypothesis and vulgar immitation will be readily admitted. It would appear from the present fashionable and indiscriminate use of mercury, that the operation of the several functions of the body, and the derangements of particular organs, were altogether disregarded, (though the phenomena of morbid action in many cases originate from local affections;) and that upon the conjectural idea of *general disease*, one remedy, modified accordingly to the peculiar notion of each individual, was alone indicated.

But there are other reasons assigned in justification of the mercurial practice in these diseases. The primary cause of intermitting and remitting fevers, it is said, depends upon some derangement in the secretory vessels of the liver; these, it is contended, must be unlocked in order to effect a cure,

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which was exhibited, and did not cease until the death of the patient. Salivation was very rarely produced by the use of this medicine.

"Having been thus unfortunate in the use of mercury, we immediately returned to our former mode of practice, which again proved as *successful* as the mercurial treatment had been fatal." *Currie's Sketch*, p. 103, 104, 105.

and mercury is the key to the hepatic system. Hence it is necessary to saturate the body with mercury. As to the febrile diseases, characterized by another train of symptoms, in which all the marks of pure synochal fever are present, on the principle that they arise from a general fulness and preternatural action of the vessels, it is declared that it is essential for the cure to diminish the former and allay the latter, and mercury is now employed to attain both these objects. With regard to typhus, as it is distinguished by a disturbed state of the sensorial functions, and great prostration of strength, these symptoms are to be removed by restoring the general excitement, and giving proper tone to the system. Mercury is now said to possess, in an eminent degree, the property of restoring and equalizing the excitement of the whole system; its tonic power, it is asserted, is its "primary operation," and in its primary operation it "communicates general vigour."* Thus it is that a single remedy possesses a "universal fitness," and is admirably calculated for all the various kinds of febrile disorders! The pernicious consequences resulting from such practice are next to proverbial.

In a future number of this work, the writer designs a continuation of the present subject.

JOHN W. FRANCIS.

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* Murray's System of Mat. Med. vol. I. p. 213.

V.

Observations *on the* Peripneumonia Typhodes, *now prevailing in several districts of the United States. In a letter to* T. Romeyn Beck, M. D. &c. *Albany, from* David Hosack, M. D. &c.

New-York, Feb. 3, 1803.

Dear Sir,

As far as you have been enabled to procure information from *books*, you are probably well acquainted with the nature of the fatal epidemic which at present prevails in the city of Albany; but as you have been only a short time in practice, this is probably the first opportunity you have had of becoming practically conversant with this disease. I therefore take the liberty of communicating to you such remarks as the cases I have occasionally seen in this city and in the county of Westchester have suggested.

The disease at present prevailing, you know, is not a new disease, as it has been hastily represented by some physicians: on the contrary, it has been well described by Sauvages, Huxham, and others: by the former under the very appropriate appellation of "*Peripneumonia typhodes.*"* Nor is this a new disease in the United States: in the first volume of the Medical and Philosophical Register you will see a very valuable paper upon this subject by the late Dr. John Bard, in which he describes a similar epidemic which prevailed on Long-Island in the winter of 1749, and which

* See his Nosologia Methodica, vol. 1. For other synonyms, see also Cullen's Nosology, under the head of "Peripneumoniæ idiopathicæ complicatæ febre," vol. 2, p. 101.

was then known by the name of the "*Malignant Pleurisy.*"

In the second volume of the Medical Repository (first series) the same disease is noticed by Dr. Hugh Williamson, as it prevailed in North Carolina, in the year 1792. In the southern states it is commonly called, "*Pleurisy in the Head,*" in consequence of the violent pain in the head, which frequently attends the disease in that climate.

Malignant pleurisy, or rather *Typhus Peripneumony,* well expresses the mixed character of this disease; for at the same time that it is attended with inflammation of the lungs, and in some instances, with inflammation of the brain, the general affection of the whole system is certainly that of *typhus fever.*

That inflammation of the lungs frequently constitutes a part of the disease, is manifest, not only from the presence of those symptoms usually attendant upon pneumonic inflammation, viz. cough, pain in the chest, especially upon taking a full inspiration, expectoration tinged with blood in the early stage of the complaint; but it is also evident from the phenomena presented upon an examination of the body after death: the overloaded state of the vessels of the lungs, the large effusion of serum and sometimes purulent matter, the adhesions found between the membranes covering the lungs, and those lining the chest, all clearly show that the patient has been destroyed by such inflammation.* In like manner, in some cases the whole force of the disease is vented upon the brain, producing similar phenomena in that organ. On the other hand the usual symptoms of a putrescent state of body, the petechiæ, blotches, hemorrhagies in the latter stage of the disease, the offensive state of the excretions

* See Report of the Mass. Med. Society, and Dr. Hudson's letter on the prevailing epidemic.

in general, and great prostration of the powers of life, which rapidly ensues, no less declare the enfeebled and vitiated state of the whole habit. You have therefore two opposite conditions of body to contend with: *local inflammation* on the one hand, a *typhus state of the whole system* on the other.

The causes of the disease are no less compounded than the disease itself. The local inflammatory affections are probably occasioned by the *sensible* changes of the atmosphere, while the typhoid character of the disease is derived from an *epidemic constitution of the air*, the same which has given rise to the *typhus petechialis, or spotted fever*, which has prevailed for some time past in our northern and eastern states, and which is doubtless the same disease as that now prevailing in Albany, with the exception, that the present epidemic is complicated with the symptoms of local inflammation of the chest, brain, throat, &c. the effect of the present cold season of the year. With this view of the *mixed* nature of the disease, and of the combined causes which have produced it, we are prepared to expect the various and opposite opinions and modes of practice which have been adopted by different physicians. We accordingly find some prescribing the strict antiphlogistic treatment by large and repeated blood-letting, active cathartics, and other depleting remedies, treating the disease as purely inflammatory.

On the other hand, we find another class of practitioners pursuing the opposite course of exciting the system by the most powerful and diffusible stimuli, to counteract the putrescent state of body; alleging, that it is exclusively a putrid disease, and only to be controuled by antiseptics and the avoidance of all those means which are calculated to debilitate the system. As far as I have seen the disease, they are both wrong: the indiscriminate use of the lancet recommended by some, is, in my opinion, an additional source of

the mortality of the disease. On the other hand, the practice of administering brandy and other ardent spirits in the quantity they have been lately prescribed, is truly adding fire to the flame that is already consuming the patient, and cannot be justified either by principle or practice. But the prudent physician will avoid both Scylla and Charybdis. In the young and athletic, he will prevent the brain from being inundated with blood, by the early and judicious use of the lancet, blisters, and other means usually prescribed for diminishing inflammation; keeping in view the age, strength, constitution of his patient, and the general symptoms indicating a putrescent state of the system. On the contrary, in feeble old age, in the habit debilitated by disease, or intemperance, in which those inflammatory symptoms are less violent, and the tendency to putrefaction is most predominant, he will depend chiefly on those means usually resorted to for the purpose of promoting the perspiration and other excretions; at the same time, that by suitable antiseptic drinks and nourishment, he will guard against that debility which so rapidly ensues in this condition of the system. He will in such cases, of course, carefully abstain from the use of bloodletting and other depleting remedies. But he will certainly not effect the first purpose by the excessive use of brandy and ardent spirits. So far from promoting the excretions of the system, they actually restrain those very evacuations which it should be our object to promote, and by which alone we are enabled to counteract the typhoid state of body in this or any other febrile disease.

As a substitute, therefore, for this *brandy* system in those cases where this typhoid tendency prevails, and you are forbidden the use of the lancet and other depleting remedies, or where the symptoms of local inflammation are so mild that they are not indicated, let me recommend to you, after emptying the bowels by an enema or *mild* purgative, to make

free use of the *warm bath*, *fomentations* of vinegar and water to the extremities, the liberal use of the infusion of *snake root*, the *eupatorium*, and wine whey in very debilitated habits, or where the powers of life are much reduced, in order thereby to procure a plentiful perspiration. By this evacuation we not only counteract the general vititated state of the fluids, but we at the same time diminish, and in some cases, totally remove the local irritation which affects the lungs or other organs, involved in the disease.

For the benefits which have been derived from the sudorific treatment, and the means of effecting it, in the petechial or spotted fever, which treatment promises to be no less beneficial in the present form of the epidemic now prevailing in your city, let me earnestly recommend to you the perusal of the very luminous report of the Massachusetts Medical Society, published in the second volume of their Medical papers, for the year 1810, and of which you will find a copious analysis in the first volume of the American Medical and Philosophical Register.

I am, Dear Sir, yours, &c.

DR. BECK. DAVID HOSACK.

*** As you, probably, do not possess the original work of Sauvages, I here subjoin an extract from his description of peripneumonia typhodes, in which you will recognise the essential symptoms of the prevailing epidemic. His mode of treatment also, which I have added, seems still stronger to point out the resemblance between the two diseases.

"*Peripneumonia typhodes*, Deplaigne Journ. de Med. Septembre 1757; *Epidemia annua apud milites à Valenciennes; Pleuro-péripneumonia bilieuse et putride.*

"*Character.* Oppressio pectoris, dolor pungitivus, aut gravativus, asthenia magna pulsus parvus, debilis, depressus, sæpè concentratus, ut plurimum vix frequens (sine febre, ut ait Auctor,) dyspnœa, respiratio intercisa, tussis violenta, sicca, sputa per vim extracta, viscida, tenacia, subflava, succedunt nauseæ, vomitio biliosa, lingua crassa, saburrâ albescente onusta, cephalalgia levis, quâ cres-

cente æger delirat obscurè, pari passu ac pectoris infarctus augetur. In cadaveribus omnibus suppuratio pulmonis, alteruter hujus lobus infarctus, vel ambo suppurati; thorax sæpe vel pure, vel sero gelatinoso plenus, similia ramenta gelatinosa in abdomine viscera obducunt: quandoque idem pus vel serum in pericardio: adhærentia plevræ dolenti lateri; non rarò polyposæ concretiones in corde, quas respiratio impedita et crebra designabat; cætera sana, nisi hepar solito majus et decolor.

"*Cura.* Post unam vel alteram phlebotomiam, emeticum præscribito, imò si pulsus parvus, minimèque frequens, ab emetica et cardiacâ potione inchoandum: deinde vel phlebotomia, vel catharsis ex minorativis et tartari stibiati granis paucis. Statim à primis evacuationibus emplastrum vesicatorium lateri dolenti applicetur; intra horas quindecim omnia symptomata mitescunt; febris minuitur, expectoratio restituitur, diaphoresis accedit, nihil in urinis mutatur; antiseptica energetica minimè in hoc morbo pertimescenda; itaque quartâ quâvis horâ sumatur bolus ex radice contrayervæ, camphorâ et nitro, vel alter bechicus et diaphoreticus, prout casus exegerit. Oxymei scilliticum, syrupus de althæâ cum aquâ scabiosæ, imperatoriæ, vel scordii, et pauxillum olei amygdalarum tussim sedant. Felix eventus ex diaphoresi et anacatharsi exspectandus, adeoque prout indicatæ fuerint, in intervallis præscribuntur cathartica minorativa, clysmata, ptisanæ nitratæ vel bechicæ, cardiaca et diaphoretica; et si delirium, vel cephalalgia urgeant, sectio jugularis optimè succedit."

VI.

Observations *on the* Malignant Pleurisy *of the Southern States. In a letter from* Hugh Williamson, M. D. LL. D. &c. &c., *to* David Hosack, M. D. *Dated, New-York, March 2d,* 1813.

Sir,

I gave you, some years ago, a short account of a disease that prevails in North Carolina, in the winter season. It is a very fatal disease, and in many cases destroys the patient in twenty-four hours. It prevails chiefly in the flat country that extends about sixty miles from the sea coast, and along the borders of large rivers at a greater distance from the sea, and in places that in the summer and autumn are subject to intermitting fevers. That disease in Carolina is much more destructive of men than of women; of grown than of young people. I suspect, that in some parts of the

state, one half of the male population, who are grown, sink under it. The disease, to which I refer, in all cases, is named a pleurisy. When it fell upon the breast, as the pain in many cases was severe, the impropriety of the name is not remarkable; but it falls upon the head, nearly as often as it falls upon the breast, and in that region is exceedingly painful. Then too, it is called, however improperly, a pleurisy in the head. The name of the disease was of little consequence, provided it had been properly treated by medical practitioners. But it was, in all cases, as far as I could discover, treated as an inflammatory complaint. My opinion was, that in all cases, or nearly in all cases, it was typhus, for reasons that I shall presently state. A very fatal disease, called the spotted fever, appeared in the year 1806, in a small town in the state of Massachusetts, and upon the following year it appeared in two or three towns in Connecticut. Since that time it has made considerable ravages in both those states. A similar disease, as we are told, has lately appeared in Albany, and in several other parts of the state, near the north river, above the Highlands, and among the troops who are quartered near the lakes. As the complaint that has appeared, in sundry parts of New England, and in this state, is said to resemble the complaint that I have noted in Carolina, in many of its symptoms, and in many instances of its sudden fatality, I have been induced to review my former observations on the fever of Carolina, and to consider whether fevers that resemble one another in so many circumstances, may not have proceeded from the same cause. For if the cause is the same, the treatment in all probability should be nearly the same.

The brumal fever that prevails in North Carolina, whether it be seated in the head or in the breast, is certainly, in my opinion, a fever of the typhus kind. It is the very fever that is called, by Sauvages, peripneumonia typhodes.

The painful observation, that so many of our most useful fellow citizens, in North Carolina, sunk under that disease, naturally excited my attention, and caused me to suspect that there might be something incorrect in its general treatment. The physician, who had the most extensive practice in the town and country in which I resided, was not, as I conceived, a philosophical practitioner, that is to say, he was not in the habit of drawing correct conclusions from facts that must have fallen under his observation. He had come from a climate where pleurisies were treated by copious venesection: the complaint before him was called a pleurisy, and he made a liberal use of the lancet. True it was, that in most cases the patient died, but he presumed, that in all those cases he died of the disease, not of the doctor. I could not allow myself to believe, that frequent venesection could be sustained in a typhus complaint; but all my observations on the subject caused me to believe that the disease referred to was decidedly typhus. That complaint, as I stated above, prevailed in the flat country, or in those places, and only in those places, where intermitting fevers had prevailed during the summer and fall. But I am induced to believe, that every intermitting fever is caused by the absorption of more or less vegetable putrescent matter. In the month of August, in the latitude of 35 degrees, in North Carolina, a man can hardly be exposed to a shower of rain, without being in danger of an intermitting fever. But on board of a ship, in the same month and latitude, at a considerable distance from land, his clothes may be saturated with rain without endangering his health. The reason is obvious. In the former case every drop of rain is charged with some putrescent vegetable substance, part of which is absorbed by the cutaneous vessels. In the latter case, the rain water is pure, it is not injurious. As the air, dews and rain, in warm climates, are usually charged with some putrescent substance, many nations in such

climates have been induced to grease or anoint their skins. This process, in most cases, preserves the health by preventing noxious absorptions. While there are copious rains during the warm season, in Carolina, the putrescent substances being diluted by much water, the complaints, in most cases, are simple intermittents. But when a rainy season is followed by warm and dry weather, the putrescent matter being more concentrated and highly excited, the frequent consequence is a simple typhus, or a fever of the typhus kind.

The winter fevers, as stated above, constantly appear in the same tracts in which intermittents prevailed during the summer; and in most cases they attack people who, in the summer or autumn, had been affected by intermittents. The winters in Carolina are sometimes introduced by a dry season, in which case, a rich soil, that in the summer had been saturated by water, is exposed dry to the action of the sun and wind, whence noxious vapours are exhaled. In the course of the summer, the rivers in Carolina are sometimes exceedingly swelled by heavy rains, and vegetable mud is occasionally deposited on some part of the upland. This mud, in the beginning of winter, being exposed to the sun, hardly ever fails to produce the fevers mentioned. Is it possible to doubt whether these fevers are typhus? And yet, strange as it may seem, the cure of these fevers has uniformly been attempted by the lancet. About twenty years ago a fever of this kind became endemic in a detached settlement in the lower part of Hyde county. There was only one practitioner of physic in that settlement, and he bled every patient that he visited. None of them recovered, but he continued to bleed. After thirty or forty of the inhabitants had sunk under his practice, the residue ceased to claim his assistance. The sick were treated by their own teas, yapon and such other remedies, and they recovered. This lesson

proved less instructive than it should have been. From facts of this kind, it seemed to be absolutely certain that the North Carolina pleurisy was of the typhus kind, and though I was not engaged in the practice of physic, opportunities presented themselves of testing that opinion. I was twice requested by a particular friend to visit a patient on the very morning in which he fell sick, in consultation with the attending physician. In the first case, as the patient complained of a severe pain in his head, his eyes being inflamed, his bowels were moved by a dose of castor oil. The effect was remarkable in sinking his pulse and in the loss of strength. Blisters were immediately applied, and wine whey plentifully administered. A diaphoresis was soon excited, and he then took a decoction of jesuit's bark and Virginia snake-root. He recovered.

In the second case, the family doctor had been called, and the patient was bled, about an hour before I saw him. This gentleman's complaint was in his breast. He was a strong man, but had been afflicted, in the autumn, by an intermitting fever; I advised his physician to make no farther use of the lancet. Blisters were freely applied once and again. The patient drank plentifully of wine whey and a decoction of Virginia snake-root. A copious perspiration was excited, and after a few days, though the phlegm that he threw up from his lungs was slightly tinged with blood, it appeared from the state of his pulse, that he might safely be treated with a decoction of the bark. It was given accordingly, and the patient recovered. This happened in the same winter in which I had visited the other patient; a winter in which that disease proved very fatal. As that disease, in North Carolina, attacks men much more frequently than women, I attempted, in the History of North Carolina, 2d. vol. to give some explanation of that fact, and to show by what means the disease, in most cases, may be obviated.

If it be true, and I think it will hardly be disputed, that those winter fevers in North Carolina are typhus complaints, and if it be admitted, that they commonly attack people who had lately been afflicted by bilious intermittents, it may be worth while to consider what is the connection between those fevers and the spotted fevers of New England, or the fever that lately prevailed in the northern parts of this state.

A committee of the Massachusetts Medical Society, speaking of the disease, called the spotted fever, observe, that it appeared during the winter, in sundry towns in the county of Worcester, and say, that "Most of the country in which this disease has appeared, is inland and very elevated; it abounds with hills and vallies; has many *ponds*, and many running streams, and fresh water rivers." It appeared also in Cambridge port, near Boston; in which town "it was confined, for the most part, to the land which was recently salt meadow, and which is now intersected by many foul ditches." By this single fact they were justified in looking for a typhus complaint.

The recent fever that has prevailed in the northern parts of this state, now claims our attention. Was it inflammatory or typhus? We deem it certain that the fever was typhus, and that it was the very fever which occurs so often in Carolina. We have seen that the fevers in Carolina are attached to a bilious habit; a certain French writer calls this very fever, a bilious and putrid pleuro-peripneumony; and we know that people in Carolina, who in the autumn have been affected by bilious intermittents, if subjected in the winter to much fatigue, or exposed to sudden changes of weather when thinly clothed, are apt to be seized by that dangerous fever. Is there not something in the history of the northern fever in this state, that bears a strong resemblance to those winter fevers in Carolina? I am not inform-

ed that intermitting fevers prevailed more than usual, during the last summer, in the northern parts of this state. But it may be recollected, that for several weeks, in the autumn, we suffered by a deluge of rain. Those rains, if the climate had been warm, must have produced intermitting fevers; they certainly produced bilious habits. In this case the settlers in that part of the state, when the cold weather began, were nearly in the same condition, and equally in danger of a typhoid pleurisy, as the inhabitants of the lower parts of Carolina, in the beginning of winter. Whether the complaints were alike under which they suffered, I am not informed. But I confide that the fever was typhoid, and I hope that it never has been treated, as I am told such fevers, in some cases, have been treated, with copious doses of brandy. For though some constitutions may happily have resisted both the disease and the doctor, the practice is certainly hazardous. I submit to your consideration whether it would not be advisable for the College of Physicians in this city to endeavour to collect from medical gentlemen, in different parts of the state, their observations upon the late endemic fever, and that treatment of the disease which they deem most safe, or that to which it commonly yielded; it being presumed, that in a northern climate, where the muscles are well braced, and where the patient has not been reduced, as in Carolina, by previous intermittents, a more liberal use of the lancet is advisable.

This is not proposed as a subject of mere curiosity. The inquiry may be of great use during the present war. It is not improbable, that in the course of the war the enemy may kill more of our fellow citizens than either of us could wish, but it is to be hoped, that exertions will be made to prevent our troops from perishing, as they do in many armies, in greater numbers, by camp diseases than by the sword. Our troops must be endangered from year to year, in cold and rainy seasons in

Canada, or upon the borders of that province, by fevers similar to that under which some of them, and some other people, have lately suffered. It is greatly to be desired that the best method of treating that disease may be ascertained. You know that a treatise on the diseases of the army, has more than once been published in Europe, at the end of a war. But it is more desirable, as I think, to publish near the beginning of a war, a good account of the best method of treating a dangerous and fatal disease, than to leave it for publication, five or six years hence, when the war may chance to be finished.

Be pleased to accept the perfect assurance of my sincere friendship,

HUGH WILLIAMSON.

DR. HOSACK.

REVIEW.

ART. I. TRAVELS *in the* UNITED STATES *of* AMERICA, *in the years* 1806, 1807, *and* 1809, 1810, *and* 1811, *including an account of a passage between America and Britain; and travels through various parts of Great Britain, Ireland, and Upper Canada, illustrated by eight maps. In two volumes, by* JOHN MELISH. Philadelphia. Palmer. Vol. 1st. pp. 442. Vol. 2d. pp. 492.

MORE travels in the United States! Yes, reader, and if you are delighted with this kind of reading, we sincerely congratulate you; for as matters are circumstanced, you are likely to have enough of it. Mr. Melish tells us, in the outset of his work, that "books of travels are always in demand with the public," and, that "the field is inexhaustible." Nothing can be more correct than the last observation; for as Mr. Melish cultivates the field, a thousand crops may be raised without impairing the soil. According to the plan which he has adopted, a man may write a volume of travels without communicating a single idea: he may write without having any knowledge of botany, mineralogy, or a single branch of civil or natural history. He needs nothing beyond a good memory. The traveller, in this case, is only to suppose that the reader is greatly in love with him, and that he reads the book for no other purpose than to see that his favourite gets safe through his journey. The traveller enters the stage, or mounts his horse in the morning, and I by itself I, is the constant burden of his tale. He tells us what he got for his breakfast in the morning, if breakfast was to be had; what he

got for dinner, and how it was cooked, or whether it was cooked in any fashion. At night, for the relief of memory, he writes down the adventures of the day. Then it is, that we learn how often, in the course of the day, he fed his horse; how many bad bridges or broken bridges he crossed. How many deep creeks and miry roads he left behind. Now his horse was up to the knees; again, he was up to his belly in mud. The horse, on a memorable occasion, in deep water, with a rough bottom, was fully overset and he and the rider were both in the most perilous situation. Happily, the rider was not drowned, else we never should have seen these two *instructive* volumes of modern travels.

That the reader may know what fortunate circumstance it was, that gave birth to these travels, we shall give him a short biographical history. Mr. Melish was born in Scotland, and served an apprenticeship in a manufacturing house in Glasgow. Having got some property, *or credit*, he came over in the year 1806, with an assortment of dry goods, to Savannah, in Georgia. There he took an assistant, or partner, with whom he left the goods, and came by water to New-York; thence he sailed to Rhode-Island, and passed on to Boston. From Boston he travelled, in the stage, through New-York, Philadelphia, and Baltimore, to Charleston; whence he passed by water to Savannah. From Savannah he returned, in the year 1807, to Glasgow, by the way of Liverpool. In the year 1808, some mercantile business caused him to visit some towns in England, and in the north of Ireland. Of those several towns he gives us a description, and of the roads by which he travelled, not forgetting his ride in a cold night, upon the top of a mail coach. In the year 1809, he returned to Savannah, where he found that the greater part of his goods had been sold to people who were not much disposed to pay. There he seems to have finished his mercantile operations.

Although Mr. Melish, for three years after his first arrival in Georgia, seems to have made a record, for his private amusement, as we presume, of every step he took, every city, town, or hamlet that he saw; every drenching that he got by a thunder storm; every tavern that he entered, and of all the silly things that were said in his hearing; we believe that he had no intention of causing the press to groan beneath their weight. These adventures, however, now compose the first volume of his travels. But the records that compose the second volume of his work were obviously made with malice prepense. They were made with the purpose of improving our patience by exercise.

Our country has been visited by travellers from different nations, and they who have written their travels, with a very few exceptions, have had the same object in view; to make a few dollars, and to vilify the country. They have written with the same spirit, the same contempt of truth, and nearly with the same proof of talents, from the French duke to the English plowman, who attempted in vain to manage a farm in Virginia. The objects of the little Hibernian, who published his travels, were to gain patronage by the libel, and to prevent the emigration of his countrymen. In the first object he fully succeeded, but unhappily not so well in the second. It is hardly worth while to mention another travel writer, who like the English wandering knight, is a *stranger* in every country of which he writes. Nor is it worth while to criticise the travels of the other creature, who calls himself Ashe, "et id genus omne." The whole fraternity have written with the same malignant disposition. We readily admit that Mr. Melish is not to be included in the above list. We believe that he has no disposition to injure the country, and if the numerous subscribers to his travels are disposed to acquit him on another account, we freely acquit him of any slanderous intention.

It is fully ascertained that a man may write very entertaining and acceptable travels without telling a word of truth. Travels of this description were lately published in Europe: they were from the Cape of Good Hope through the interior of Africa, to Fez, in Morocco. It has since been discovered that the writer never was in Africa. He had respectable talents, and a fertile imagination. It is also clear, that without either of these accomplishments, a traveller may adhere to the truth, without writing a line that deserves to be read. We stated above, in accord with Mr. Melish, that *the field* of travel writing *is inexhaustible.* The writer before us, has given an example that may stand for a proof of this assertion. By the help of a good map, and a gazetteer he has given us an account of three states that he never saw, viz. New-Hampshire, Vermont, and Tennessee; accounts that are quite as good and satisfactory as he has given of the states through which he travelled. It follows, that by the help of a map and gazetteer, he may travel for ever without leaving his chamber. The chief defect in those *sedentary* travels, would be, that they could not well contain that which is the great burden of modern travels, the writer's account of himself. They could not tell us how many rivers he swam in a stage waggon: how often his horse was afrighted by a peal of thunder; how often he met with an old acquaintance; how he slept in a house with broken windows, and other interesting anecdotes of that kind. But this very defect, as we conceive, might be fully compensated by the help of a little invention. His travels might be diversified by curious incidents, and they might be enlivened by diverting anecdotes made or borrowed. Thus it happens to the individual who publishes an almanac; he employs an astronomer to make the calculations of the rising and setting of the sun and moon, their eclipses, and such other phenomena. These serve as a gazetteer and map to the frugal traveller. But

every thing that respects the weather, temperate or cold, hail or snow, dry or wet seasons; all those subjects are inserted by the publisher himself, by pure conjecture. And yet we know that this child of conjecture is the most popular part of the almanac.

By this time the reader may be desirous to know some of the veritable incidents that happened to Mr. Melish, during his travels. We shall give him an extract from each volume. The scene is laid in South Carolina; time, October 13.

"Passing over many creeks and swamps of inferior note, and there is hardly any thing else to excite attention in this country, we reached Blackmango creek at 4 o'clock in the afternoon. This creek had swelled to a great extent, and part of the bridge was gone, so that we could not get over the stage nor horses. We got across with the mail, which we delivered at the post-office, where we were informed that the Georgetown mail had not arrived, and so we were set fast at length at a miserable little place called Willton.

"The whole city consisted of only about fifteen or twenty hottses; as for public buildings, there were none, but there was a tolerably good wooden building, at which I was told a Scots man kept a dry goods store. Ah, thinks I, to myself, notwithstanding the eminent wretchedness of the place, Saunders has found out that something is to be done here. However, Paddy was not behind with him. The greater part of the other inhabitants were Irish people.

"I took up my lodgings at the head inn, (there were two in the city.) I found my landlord a civil obliging little Irishman. I told him my adventures in the stage from Lumberton, at which he laughed heartily, observing, by —— you must have had a rough time of it, and I'll warrant you have found the ground of your stomach: weel, weel, the old woman will have something ready presently; and I'll see to have a little bit of beef; and though it's salt we'll have plenty of vegetables to it, and some poratoes, the seed

of which I got from old Ireland; and in the mean time we'll just have a little drop of something to drink peace and good neighbourhood. Och now I do like to see a countryman, and although you are not just a countryman neither, yet you'r the next door neighbour to it, and that comes to the same thing." So saying, he set off to give the necessary orders about the dinner, and soon returned with the bottle, attended by the doctor of the city, whom he introduced to me as a country man, and as honest a fellow as ever crossed the great sea. While we were regaling ourselves, the doctor was seized with an ague fit. Och now doctor, says the landlord, what's that for? you should leave the like o'that to me who am a train'd hand at it; It's I can rap it away to some purpose when I begin. And he soon did begin to rap it away. He was seized with a violent fit. I felt for them at first. But when I observed their wo-begone countenances and odd gestures, I could not help comparing them, in my imagination, to Shakespear's admirable simile of patience on a monument smiling at grief, and was obliged to burst out into a loud laugh. The landlord, forgetting his ague fit, joined me. "By my shoul, says he, you'r a pure one. I believe now, if you were to be here, beside me, with that merry face of your own, you would do me more good than the doctor with all his medicines. Doctor, why don't you shove that rascally ague about its business, and join me and the gentleman in the laugh." The doctor smiled, which was all the length he could go; however, they soon got clear of their shake, and we sat down together to dinner. "Ay, this is something like civilization," says I, putting my fork into the salt beef. "Now, would you have expected that I could have mustered you up a little bit of stuff like that?" said the landlord. "Now eat away heartily, and make yourself at home; and here's some poratoes for you, and some sweet poratoes, and there's some beans and turnips; take some o'that now, and some corn bread, and some o'these cakes that was baked for you by the old woman, and eat heartily and make your dinner, dear, for you see we don't want good fare though we have got into a queer out o'the world looking place."—p. 268—270.

If we should be asked why this strange dialogue comes to form a part of the travels, we reply, that it helps to increase the size of the book; just as a boy by puffing wind into a bladder causes it to swell.

Vol. 2. p. 261. The scene is laid in the state of Ohio.

"The landlord was from home, and the family were ill provided They had no bread, nor wherewithal to make it; they had no beef and no sugar; but they had some bad tea, bad potatoes and pork, such as I have seen in North Carolina. They made a sort of nondescript dish, by stewing a few slices of potatoes with the pork, and served it up swimming in butter. It put me in mind of Burn's "Olio, that would staw a sow." However, my fellow-traveller, the salt hauler, made a very hearty meal; and I took a little, and but a little of it, albeit I got no dinner, and had a pretty good appetite. Some milk came in from the cows of which I partook freely, and an obliging Rhode Islander, who lodged at the house, favoured me with a little whiskey and water, which I found a real cordial.

"The night was very cold, and the kitchen, which contained the only fire in the house, being ill secured against it, I retired to bed in an adjoining room. As I dreaded the effects of the cold, I threw my own clothes over the bed clothes, and noticing a pane out of one of the windows, I shoved an empty bag into it, and retired to rest.

"October 18th. I awoke early in this morning, shivering with cold, and wished it might soon be day light that I might depart from this uncomfortable place. At last day dawned, and I was not long in perceiving the light, for it poured in upon me in all directions, perpendicularly, diagonally, and laterally. The house was literally like a riddle, and there was an opening almost close by my bed side that would have let in a horse. When I looked round and perceived so many openings I could not but laugh at my precaution of last night, in stopping up the broken window; where, however, I allowed the bag to remain as an admonition to the people to repair the house before winter."—p. 261—2.

Mr. Melish has made an attempt, vol. 2, p. 342, near the falls of Niagara, to instruct his readers, by vindicating a brother traveller from the charge of infidelity in not believing the Mosaic history. He, too, it seems, has his doubts about *oral*, that is to say, written revelation, nor does he admit the *popular opinion*. This reminds us of two men who drank too deep at a tavern, and going home, in a rainy night, one of them fell into the gutter. Help me up, said he. The other tried, but did not succeed. My dear friend, replied he, I cannot lift you, but I will give you the best proof of affection, I will lie down with you.

The reader will excuse us if we detain him a few minutes longer by taking some notice of a conversation which Mr. Melish relates as having passed between himself and Mr. Jefferson, who, anno. 1806, was president.

"On my arrival at the president's house, I delivered my address to a servant, who, in a few minutes returned with an answer, that Mr. Jefferson would be with me presently, and showed me into an elegant apartment. Mr. Jefferson soon entered, by an inner door, and requesting me to be seated, sat down himself, and immediately and very frankly entered into conversation by asking where I had landed, and how long I had been in the country? Having informed him, he remarked, that I would probably be travelling to the northward. I replied, that I had been to the north, and was now travelling to the southward. "And how do you like New-York?" "Very much," said I; "it is one of the finest seaports I have seen, and I presume will always continue to be the first commercial city in the United States." He observed, that he found that idea generally entertained by strangers; that New-York was a very fine situation, and would unquestionably continue always to be a great commercial city; but it appeared to him that Norfolk would probably, in process of time, be the greatest sea port in the United States, New Orleans perhaps excepted. He pointed out the circumstance of the vast confluence of waters that consti-

tuted the outlet of the Chesapeak bay, on which Norfolk is situated, and remarked, that these rivers were but partially settled, but they were rapidly settling up, and when the population was full, the quantity of surpluss produce would be immense, and Norfolk would probably become the greatest depot in the United States, except New-Orleans."—Vol. 1. p. 201.

We have transcribed this dialogue, not because Mr. Melish saw any thing particular in it; he simply recorded it, as he recorded his discourse with the little Irish tavern keeper, to increase the size of his book. But we have transcribed it because it exhibits the character of Mr. Jefferson, the Virginia president.

Is it possible that any man, whose mind is not deeply biased by jealousy, should compare New-York with Norfolk, and give the preference to the latter. The situation of Norfolk is not healthy, the water in the city is very bad; worms in the harbour are very troublesome, all the adjacent lands are very poor, and they are cultivated by slaves. That city can never be the depot, except of the produce from James's river and some part of North-Carolina. The situation of Baltimore is, on every account, more desirable. It must carry off the produce of Maryland and a considerable part of Pennsylvania. How is Norfolk to become great? The very idea is romantic; but the thoughts of New-York becoming great is not to be endured, lest Virginia should cease to give presidents and laws to the union. It has long been suspected and feared that New-York would become a dangerous rival to Virginia, and those fears have greatly increased from the time in which some gentlemen in this state, formed the magnificant project of bringing the exportable produce from the great lakes, to the city of New-York, by means of a canal. That project, however, is now in a train to be defeated. Canada is to be taken, and then the lofty projects of New-

York will vanish into smoke. The commerce of Vermont, and half the commerce of our own state will then be thrown into the river St. Lawrence. In that case we must decline instead of growing, and the Virginia planters will have the pleasure of seeing a great commercial project defeated. An event so much desired by men who despise commerce, may give a spring to southern exertions in the conquest of Canada.

ART. II. *The* INTRODUCTORY LECTURE *of* THOMAS COOPER, *Esq. Professor of Chemistry at Carlisle College, Pennsylvania. Published at the request of the Trustees. With notes and references.* Carlisle. A. Loudon. 8vo. pp. 236. 1812.

THIS is no ordinary discourse, nor the production of an ordinary mind. Mr. Cooper has long been known as a learned and able cultivator of natural and experimental philosophy; as the intimate friend and companion of the celebrated Priestley, and afterwards as his distinguished biographer. He now appears before us in the still more important character of professor of chemistry; and the present publication is inaugural to his assumption of the duties attached to his new situation. The subject which he has chosen on this occasion is the history of chemistry as cultivated in the earliest ages of society, among the Jews, Egyptians, Phœnicians, and other ancient nations. The history of the chemical art, as known among the Greeks, Hindoos, and Chinese: the state of the science in what are called the dark ages, and in the more enlightened days of Boyle, Mayow, Hook, and Hales, and from that period down to the present time.

There was a peculiar propriety in selecting such a subject

for such an occasion. The theme is replete with matters eminently deserving the attention of the chemist, and of all who are desirous of becoming acquainted with the philosophy of the human mind. For if we examine into the origin and early state of chemical science, if we investigate the causes by which its advancement was facilitated or retarded; if we attend to its history from the time in which it was scholastically disciplined in the days of Pythagoras and Aristotle, and subsequently through the delusive and extravagant, though by no means useless, attempts of the alchemists, down to the period in which it was protected and aided by Bacon and Boyle and Newton, and still later, when its cultivators were Black, Priestley, Scheele, and Lavoisier, we shall scarcely become less familiar with the rise and progress, the fall and decline of science in general than with chemistry. So intimately connected are the various branches of human learning.

That Professor Cooper was qualified for the task he has undertaken, we need no other evidence than the work before us. Within the same number of pages, we have seldom seen manifested, more extensive and laborious research, more acute discernment, and more severity of judgment. The observations and reflections which he makes possess peculiar force and propriety, and are characteristic of a mind, in its conceptions at once vigorous and original. We shall enrich the pages of the Register with several extracts from the present Lecture of Professor Cooper; for however valuable the work may be, there are few of our readers, we believe, who have had an opportunity of perusing it; for such seems to have been the negligence of the booksellers, that although printed in a neighbouring state, we doubt whether another copy, than the one before us, can be found in this city.

On the state of chemical knowledge in the earliest ages of

society, so far as it can be ascertained from the sacred writings, the following information is communicated:

"I propose, therefore, to inquire what was known of the chemical art, in the earliest stages of society, as related to us in the Bible; comprehending the detached facts of knowledge among the Jews and the Egyptians. I shall pursue the chemical attainments of the Egyptians and Phœnicians, partly by means of modern remnants of ancient art, and partly from the relations of ancient authors, principally Herodotus, Diodorus Siculus, and Pliny. It will then fall in with my plan, to treat of chemical knowledge among the Greeks and Romans, and briefly to notice the manufactures of China and Hindostan. The chemistry of the middle ages, and the discoveries of modern Europe since the establishment of public societies for the propagation of knowledge, will fill up the sketch.

"I shall begin with the Mosaic relations upon this subject, because, whatever objections may have been made to them, they carry marks of internal evidence that entitle them to great consideration, independent of any theological questions which may be connected with them, and with which in these lectures, I have nothing to do. Moreover, the general character and extent of the Mosaic chronology, (adopting the results afforded by the Septuagint version) bids fairer, in my opinion, to harmonize with the established and probable facts of profane history, and with the progress of civilization in particular, than any other with which we are acquainted.

"We are told then, that Tubal Cain, some generations after the Mosaic period of the expulsion of Adam, was the instructor of all those who worked in *iron* and in *brass*. Whether the original word here translated brass, was really meant to designate that specific mixture of zinc and copper, now so called, I know not. I doubt it, because the evidence appears to me very strong that little was known of that mixed metal, till the discovery of the three kinds of orichalcum at Corinth. Brass, indeed, is repeatedly mentioned in the Old Testament, but I should, in all cases, call it cop-

per. The translators of the Scriptures, though learned men, need not be regarded as expert chemists. Tubal Cain is supposed to have given origin to the VULCAN of the Greeks, not only from similarity of name, but profession: but I hesitate about etymological analogies: by learned and ingenious men, such as Dr. Swift in jest, and Mr. Bryant in earnest, etymology may be moulded into almost any shape that fancy and ingenuity may think fit to dictate.

"That *wine* from the grape, was an antideluvian discovery, does not clearly appear; it is said, Noah *began* to be a husbandman and planted a vineyard; nor does he seem to have been sufficiently aware of the effects of this liquor. From his time forward, however, it appears to have been a very common beverage both with the rich and the poor, for reasons that seem to me implied in the singular expression in the fable of Abimelech. Until the time of Isaiah and Hezekiah, in whose reign that prophet flourished, the juice was pressed out, not by machinery but by men's feet: at what time machinery was first introduced for this purpose among the Israelites, I find no passage that indicates. The regulation of the liquor in a fermenting state, seems alluded to in a passage in Job. The wine appears for the most part to have been made from a red grape.

"Chemical practice, however, must have been in a good state in Egypt, in the time even of Joseph. We find him directing his silver cup to be put into Benjamin's sack. The process of embalming also, was tedious but seemingly skilful in his time; for the physicians, who embalmed the body of his father Jacob, were employed forty days upon the business. These embalmings, (after taking out the intestines and the contents of the scull, pickling the body in salt and nitre, and drying it), were probably finished by a solution of some of the resins, (wherewith Egypt, Arabia, and Syria abounded,) in the liquid turpentines from the class of firs: for the resins could not have had an alcoholic solution, distillation being then unknown.

"That they were acquainted with *resins*, and many of their properties, appears from the composition of the sacred perfumed oil, di-

rected to be exclusively prepared for religious uses by Moses, from oil impregnated with stacte, onycha, galbanum, frankincense, myrrh, cinnamon, and calamus. So also in the first book of Chronicles, mention is made of the oil of the spices, which seems to have been the holy perfumed oil, already noticed.

"*Oil* from olives is mentioned in various places in Exodus, Leviticus, and Deuteronomy. The Egyptians expressed oil also from the sesamum and the rape seed, but no passage occurs to me of the use of these articles among the Jews. The olive oil was used as a luxury to the person, as an article of food, 8 Lev. 26. and for lamps. This latter use of oil, though common to the Jews and Egyptians, was not known to the Greeks in Homer's days, probably from the dearness of the article. The fruit was pounded in mortars for the purpose of extracting the oil.

"That the resins for embalming were dissolved in liquid turpentine, is further rendered probably, in as much as pitch, tar, and bitumen were well known. This appears from many facts that may be referred to: but as the act of rendering oils drying by metallic oxyds was then unknown, as well as the act of distillations, and as rosin and burgundy pitch could not then have been known for the same reason, and as common pitch was too dark for the purpose, the process of embalming must have been as I have described it, so far as concerns the varnish.

"Moses is said to have been skilled in all the learning of the Egyptians; from them, doubtless, he derived his knowledge of precious *stones*, and *engraving* upon gems: of *dying* blue, purple, scarlet, and crimson, upon linen, the staple commodity of Egypt. The art of *gilding* and *plating*, both with silver and gold, appears also to have been known in his time, for wood and baser metals are mentioned as having been covered with these more precious substances. With respect to the golden calf which he made the children of Israel to drink, there appears to be some uncertainty as to the process employed. Stahl or Bergman first suggested its solution in liver of sulphur: the Bishop of Landaff (Watson) thinks he filed it. (I refer to his Essays.) And Professor Michaelis, of Gottingen, is of opinion that it was merely gilt wood.

"In 18 Gen. 8. Abraham is said to have set before his guests butter and milk, and in 32 Deut. 14. the butter of kine, and the milk of sheep are mentioned. The art of bread-making was well understood in early days, for leavened and unleavened bread are repeatedly noticed in the Old Testament. The first invention for bruising the grain and making meal, must have been by pounding in a mortar: when mills were invented does not appear. In 18 Gen. 6. Abraham directs Sarah to knead three measures of fine meal, which Goguet (1 Goguet 104) thinks implies the use of mills: an implication of which I do not see the force. There are, however, some passages in the Old Testament, wherein mention is made of mills and millstones.

"Soap and nitre, or the mineral alkali, are expressly mentioned by Jeremiah; 2 Jer. 22.

"Beer was certainly known in Egypt at a very early period: no mention of this beverage occurs in the scripture books of the Old Testament; but vinegar was in very common use for this purpose.

"I do not find any thing further in the biblical account of chemical facts worthy of distinct notice. The Jews seem to have had little taste for the arts, which, in the time of Solomon were at so low an ebb, that he found it expedient to send for workmen from Tyre. The luxuries of dress used by the Jewish ladies, are curiously and distinctly enumerated in the latter end of the third chapter of Isaiah; and the twenty-seventh chapter of Ezekiel contains an instructive account of the commerce of Tyre."—p. 11—17.

On the state of chemistry, as cultivated by the Egyptians and Phœnicians, our author has dwelt at some length, and has communicated many interesting facts. On the subject of glass, he observes,

"*Glass* appears to have been discovered by some Phœnecian sailors, who, making use of turf containing soda, (natron. nitrum,) to boil their pots, found the pots vitrified, and the ashes and the

sand, run together into the transparent substance we call glass. According to Pliny, this was in very early times. The manufacture was commenced at Tyre, and the sand for the purpose, was chiefly procured from the banks of the Belus, a small river that still runs by St. John D'Acre, and called by the Arabs, Nahr Halou. The art of glass making, (for two thousand years a source of great gain to Tyre and Sidon,) appears to have passed from thence to Egypt, whose inhabitants in the time of Pliny and Diodorus of Sicily, were remarkable for their dexterity in manufacturing artificial gems, particularly imitations of the cyanus, (which I take to be not the sapphire, but the blue lapis lazuli,) the smaragdus or emerald, the sapphire, the hyacinth, and the carbuncle, or ruby, these include blue, red, and green coloured glass. I agree entirely with Bergman and Goguet, that the collossal serapis of nine cubits high, mentioned by Pliny, and the obelisk of four large emeralds in the temple of Jupiter, noticed by Theophrastus, and the transparent hollow column at the temple of Hercules, at Tyre, mentioned by Herodotus, were not real but artificial gems, composed of coloured green glass. That large columns of glass were not unknown to the ancients, still further appears from the seventh book of the Recognitions of St. Clement, wherein St. Peter is desired to go into a temple, in the isle of Arad, to see some columns of glass of great size. The Recognitions of Clement, indeed, like the shepherd of Hermas, and the other pious reveries, dignified with the title of apostolic fathers, (translated by Archbishop Wake,) are of very slight authority for a theological fact or opinion, but the very mention of a column of this nature, shows that the thing was considered as within the compass of art at that time. Indeed, I suspect all these emerald figures of great size, *might* have been glass varnished with a green coating: for coloured varnishes were in use in the process of embalming among the Egyptians. Guyton Morveau has lately ascertained, that the large (supposed emerald) basin, called the sacro catino, which Bonaparte removed from Genoa to Paris, is coloured glass; for it is much softer than any genuine emerald, and it contains the defect of glass, which workmen call blebes. Rock crystal scrathes it."—p. 19—21.

Proceeding with the chemistry of the Egyptians, Professor Cooper next notices their knowledge of the arts of dying, their pharmaceutical preparations, &c. He afterwards gives a short sketch of chemical science as it was cultivated among the Greeks, Romans, and Chinese. On the chemistry of the Hindoos and other eastern nations, he thus remarks :

"In fact, there have been chemical processes known among the Hindoos and Chinese from time immemorial, that European science cannot yet either explain or equal. The account given by Pliny, of Egyptian printing, no one conversant with calico printing will doubt of being derived from the artists of Indostan; whose colours are more vivid, and, (as I guess,) whose processes are more simple than any yet discovered by the Europeans. Their colouring drugs are not the same, nor are their mordants so complicated. Their red dye is from a gallium; for galls they use myrobalans; the mordant seems to me to be pencilled, and in some cases I have suspected chemical colours on their chintzes, that is, colours not raised by immersing the whole cloth in a boiling infusion of the colouring drug, but laid on, in the first instance, upon the precise spot where they were intended to appear. A second, or light red of this kind, I have long known, though its application requires much caution; but a full and deep red of the same description, that would supercede the necessity of dying the whole piece in the madder bath, would be a discovery invaluable to the European artist. The cuttings and polishing of precious stones, and the working in various metals, were certainly practised by the Hindoos long before any European knowledge of the kind appears. The Athenian ambassadors describe the glass drinking cups, *ναλινα εκπωματα*, in use among the Persians before the time of Alexander the Great. (Aristoph. Acharn. I. 2.)"—p. 47, 48.

The view of chemistry and the arts, from the middle of the seventh to the seventeenth century, i. e. from the taking of Alexandria by the Saracens, in 642, to the establishment

of the philosophical academies in Europe, the first of which was that of Del Cimento, in Florence in 1651, is no less replete with valuable information. The great and distinguished men who pass before him during this long period, appear to have received each his due share of praise for their labours in the advancement of science, particularly of chemistry. For the aid which he received in this part of his undertaking, our author confesses himself greatly indebted to the elaborate work of Professor Bergman, the Historiæ Chemiæ Medium Ævum. The same ability is displayed by Professor Cooper in his examination of the respective labours of Black, Cavendish, Scheele, Priestley, and Lavoisier, and of subsequent chemical philosophers. The introductory lecture closes with some brief notice of the progress of mineralogy, which our author considers as the handmaid of chemistry.

In the notes added to this Lecture, and which constitute the greater part of the whole work, we find the same depth of research, and the same variety of illustration. The note on the *Papyrus* is one of the most interesting; we shall embody it among our pages, and with it close our extracts.

"*Papyrus.* The ancients wrote, 1st. on smooth lead. Hesiod's poems, deposited in the temple of the muses at Becœtia, were so written. 2dly. On boards planed smooth: on such were the laws of Solon, written in boustrophedon lines. These were the *libri in schedis*, the common books of the Romans. 3dly. *Libri cerei*, boards planed and waxed. These were written on with an ivory or metal pointed pen; hence *stylum vertere*, one end being used for writing, the other for erasure. 4thly. *Libri lintei*, where the wooden tablet was covered with linen; on such were the sybylline books, and some ancient laws written: sometimes I presume with atramentum; but Drummond and Walpole, in their Herculanensia, Diss. 7th, says, the linen was waxed. 5thly. *Libri in coria*, mentioned by Ulpian, lib. 52. were such as had an under layer of

leather, to prevent the transparency of the first layer, as I think, from the description in 13 Plin. 12. 6thly. The *membrana*, which I also suspect to be a kind not so well dressed as, 7thly. the *pergamena carta*, which approached our parchment: a manufacture promoted by Eumenes, king of Pergamus. 8thly. Bark, paper *è cortice tæneotica*. 9thly. Coarse wrapping paper, used by tradesmen, made out of coarse paper and straw, *emporetica*. 10thly. The *Papyrus*. Consistence was given to all these by size, or by paste, made of flour, or by boiling the crumbs of fine bread. The membrana charta, the charta coriacea, the pergamena charta, and the charta papyri, were all liable to be moth-eaten, "aut tineas pasces taciturnus inertes," Hor. Ep. 20. For the various other denominations of paper, as the *hieratica*, or paper for religious treaties, the *liviana*, and *augustina*, or royal paper; the *fanniana*, from a paper-maker of that name, the *saitica* from Sais in Egypt, *tæneotica*, the *emporetica*, &c. I refer generally to 13 Pl. 12.

"The charta è corio, mentioned by Ulpian, I have already noticed. Justinian, whose institutes were published in the year 533 of our æra, enumerates tables, paper, and dressed skins. Literæ quoque licet aureæ sint, perinde chartis, membranisque cedunt, 2 Inst. tit. 1. sec. 33. Sed si titio petas tuos libros tuasve membranas, (qu. does not this imply that the parchment was not used for books?) Ib.

"Nihil autem interest, testamentum in tabulis, an chartis, membranisve, vel in alia materia est. 2 Just. Inst. tit. 10. sec. 12. Hence also it appears, that the letters were sometimes gilt, (embossed and burnished, from whence I suspect arose the practice of illuminating missals.)

"The paper books attributed to Numa, were certainly forgeries, as appears from the anachronism of their containing pythagorean tenets. 13 Pl. 13.

"The papyrus, whence our appellation paper, deserves further notice.

"The papyrus, according to Pliny, was made of the thin pellicles (phylyra) of the stem of the plant called papyrus, growing in the Nile, about ten feet high, in about three or four feet water.

(Bruce has given a plate of it.) The centre coat was best. When separated by a sharp-pointed instrument, and laid across each other at right angles, they were moistened, then pressed, and dryed in the sun. Generally, the saccharine mucilage of the plant itself, (a great part of which was an article of food,) was sufficient to give an even and smooth tenacity to the pellicles thus separated, when pressed. If not, they were moistened with a kind of paste, or starch, made of wheat flour and vinegar, then dried, and beaten with a mallet. Sometimes with a paste, made by boiling bread and straining it. The Romans, under the emperors, used to polish the papyrus, thus treated, with smooth ivory, and subject it to rollers and presses.

"In making up a book, the written paper was rolled on a stick or roller, *umbilicus:* the ends of the umbilicus, *cornua*, were much ornamented. So was the outside of the volume, (volumen, roll,) called *frons*. The title σιλλαϐη (whence our syllable,) was then stuck on the outside. The whole volume might be about three feet wide, and forty or fifty feet long. The books found at Herculaneum and Pompæi, according to the late report of the Rev. Mr. J. Hayter, whom the Prince of Wales employed, about ten years ago, to examine and unroll them, are of papyrus upon wooden rollers: the leaves are from one to three feet broad, and when unrolled extend from thirty to forty feet. He says, the ink contains much gum, and no acid. Hence it should seem, that they were written on by means of a reed (calamus) dipt in the atramentum librarium of Pliny, which was fine size and lamp black. It was common to insert a piece of parchment between every four or five leaves of papyrus, to support them. Much pains was taken by the paper makers and bookbinder: thus Horace ad librum suum, epist. 20.

"Vertumnum, janumque liber spectare videris. (That is, you will be sent to the Forum, where these statues were erected.)

"Scilicet ut prostes, Sosiorum pumice mundus. (Polished with the pumice, and for sale at the bookstore of the Sosii.)

"Sometimes the leaves before writing were first polished with a tooth, 13 Pl. 12. For more on the subject of papyrus, see 5 Herod.

58. 4 Theoph. 9. 13 Pl. 11, 13. Drummond and Walpole's Herculanensia, Dissertation 8th, and Bruce's travels, who has given a good plate of the papyrus.

"Job xxxi. 35. talks of writing a book. I think, with many divines, this is a sacred drama of eastern origin. If so, this book implies the use of papyrus at an early date. See 1 Gog. 187.

"Phylyra, 13 Pl. 11, is not only the name for the finer interior filament of the papyrus, but of the maple, the sycamore, the beech, the mulberry and the linden tree, all which were occasionally converted into paper, when sized, beaten, dried, and rolled. The common paper in the time of the emperors was from nine to twelve inches square.

"The papyrus paper was succeeded by paper made of cotton, or at first perhaps of silk; for although the cotton paper acquired the name of charta bombycina, yet it is highly probable, that the refuse silk was first applied to this purpose, as in China. The Indian, or finer silk, was sericum, (inter sericos jacet pulvillos,) the inferior, or Syrian silk, was the bombycinum. By and by, the frauds of the paper-makers, substituted the byssus, or cotton, but still it was sold as silk paper: till coming into common use, all the cotton paper retained the name of charta bombycina. The papyrus continued in use at Rome from about two hundred years before Christ to the end of the eleventh century, when many of the papal bulls, according to Father Mabillon, were written on papyrus. Montfaucon mentions a manuscript on this paper in the king's library at Paris, of the date 1050. Parchment was also still in use at the same period."—p. 163.—168.

In the course of our labours we have frequently, and with great pleasure, borne testimony to the rapid improvements in American typography. On the present occasion, however, we are compelled to remark, that the mechanical execution of the present volume would disgrace the state of the arts as cultivated by our Plymouth forefathers.

ART. III. *An Essay on the* BILIOUS EPIDEMIC FEVER, *prevailing in the state of New-York. To which are added, a Letter from Dr.* JAMES MANN, *Surgeon General to the Army, and a Dissertation by Dr.* JOHN STEARNS, *delivered before the State Medical Society, on the same subject. With Notes and Observations on these productions. By* CHRISTOPHER C. YATES. Albany. H. C. Southwick. 8vo. pp. 48. 1813.

IN the first volume of the Register, p. 87—96, we offered to our readers a brief analysis of Dr. Strong's Dissertation on the Petechial or Spotted Fever, as it prevailed in Connecticut, and in some of the eastern states. In the same volume, p. 226—244, a full view was taken of the able Report of the Massachusetts Medical Society, upon the same disease, as it appeared in that state, accompanied with some editorial remarks upon the peculiar character of the disorder. In our second volume, p. 440, we announced the treatise of Dr. North. Beside the reviews of these works, which, we believe, are all that have been given as distinct publications on the spotted fever, several original communications on the same disease may be found in the pages of this journal. We state this, in order to facilitate the inquiries of those who are desirous of obtaining all the information they can relative to the epidemics, which, within these few years, have caused so great mortality in the United States.

The disease, which is the subject of the pamphlet before us, like the epidemic lately so prevalent in the eastern states, has, from the peculiar character which it assumes, and the fatality which accompanies it, deservedly attracted the attention of medical practitioners. The remarks which have

been made upon it are, as yet, confined chiefly to the ephemeral columns of the newspapers, and indeed the pamphlet of Dr. Yates, with the exception of some few pages of it, is made up of materials from these sources. But it is matter of little moment through what channel the opinions of our medical brethren are communicated to the public, provided those opinions be deliberately formed, and candidly given, without prejudice or illiberality, and are the result of attentive observation and experience. That such, however, is not the fact, and that the opinions which have been offered on this disease have, in a majority of instances, had their origin in a partial and erroneous view of its nature, and that they have been maintained for the purpose of supporting some pre-contrived theory, and of giving plausibility to some favourite practice, is sufficiently evident from the general complexion of most of the essays on the subject which have come within our notice. Different physicians, living in the same district of country in which the disease prevails, often witnessing the same cases of the disorder, laying claims to equal experience in the management of it, and boasting of equal success in the result of their practice, are the abettors of theories and modes of treatment diametrically opposed to each other. The disease, says one, is purely inflammatory, and depends upon a sthenic diathesis of the whole system, copious depletion is indicated, and large and repeated bloodletting is had recourse to. The reverse of all this, says another, is the fact. The disease is, from its commencement, characterised by every symptom of the lowest species of typhus, and to arrest its putrid tendency, the most powerful and diffusible stimulants are requisite, and brandy and laudanum, spiced wine and æther, are poured down without measure. We will not insult the understanding of the reader, with facts of this kind in his recollection, by introducing any arguments to prove, that the great mortality of the epidemic,

now prevalent in this state, like that of the spotted fever of Connecticut, has been caused by such extraordinary and unjustifiable methods of treatment.

Our opinion of the nature of the present epidemic, (if strictly speaking, it may be called an epidemic,) and of the method of cure, which we believe will be found most successful, and which, indeed, as far as our experience goes, and from all that we can learn, has actually proved the most beneficial, may be found in a preceding article in this number.* The name, *Peripneumonia Typhodes*, under which this disease is there described, appears to us to convey the most accurate idea of its nature, and our subsequent opportunities of observation, since that article was penned, give us additional reason to adhere to the opinion there advanced. That the present epidemic is a "new calamity," and "unknown" before in this country, we can no more admit, than that it is the yellow fever of the West Indies; and we regret that any writer of respectability should so far have committed himself as to have pronounced such an opinion. The powerful agency of climate, season, temperature, the local circumstances of country, variety of situation and of constitution in the origin and modification of diseases, are well known to all who are conversant with the history of epidemical disorders; and to this agency, we have the highest probable evidence, we may attribute whatever peculiarity of character this disease has assumed. But we return to the Essay of Dr. Yates.

The fever here described under the name of bilious epidemic fever, made its appearance, according to Dr. Yates, in the city of Albany, in October, 1812. The few cases

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* See Dr. Hosack's observations on the Peripneumonia Typhodes. See also Dr. Williamson's observations on the Malignant Pleurisy.

which then occurred not being characterized by any peculiarity in its symptoms, excited no suspicion. About the middle of December many were attacked with it in a severer degree, but still there was no particular cause of alarm until the beginning of the following month, when a few cases assumed the deceptive appearance of violent pneumonic inflammation, and in which the ordinary treatment, instead of removing the disease only hastened it to a fatal termination. During the month of January, many patients who were attacked with the disorder died, and the "clashing practice" adopted by different practitioners, increased the mortality. From the success of the method of treatment pursued by Dr. Yates, he was induced to publish his observations on the disease, which he did on the 26th of the same month, in the newspapers of that city. His subsequent practice, after this period, afforded him opportunities of becoming more familiarly acquainted with the nature of the disease, and enabled him to enter more fully into a description of its symptoms, nature, and treatment. We shall make an extract or two from this part of his work.

"The REMOTE CAUSE of this fever appears to be *general*, being confined to no particular district, town, city, or village. From this circumstance we are induced to consider it as existing in the air: how or from what cause we cannot tell.

"The EXCITING CAUSES may be various; intemperance in eating, or drinking spirituous liquors, fear, anxiety, exposure to excessive heat or cold; in short, all the causes which generally bring on common colds.

"The PROXIMATE CAUSE appears to be a secretion of morbid, acrid matter, or vitiated bile; this secretion taking place in so large and important a gland as the liver, on whose healthy action the division and assimilation of our food depends, and the consequent purity of the blood, has a tendency to excite, create, and ac-

cumulate the sudden, distressing, and alarming symptoms, which, as it were in a few minutes, usher in this disease."—p. 18.

"This disease is confined to no particular stage of life. Children and old people were less liable to it than the middle aged and young. Men were much more subject to it than women.

"PREMONITORY SYMPTOMS were not always discoverable. Sometimes a lassitude and indisposition to action, and eratic pains through the chest and sides, preceded the attack for a day or two, and sometimes the pain in the head and back were so light for two or three days, that the patient felt no disposition to make serious complaint.

"The GENERAL SYMPTOMS of an attack of this fever are,

"1st. *Cold chills*, which last but few hours, and are succeeded by,

"2d. A degree of *heat on the surface*, little above natural.

"3d. *Pain in the head*, arms, small of the back, and lower extremities.

"4th. The blood vessels of the eyes preternaturally distended.

"5th. *Tongue* pale and moist, with little fur.

"6th. An uncommon degree of languor and debility pervading the whole system.

"7th. More or less nausea, and sometimes vomiting.

"8th. *Pulse* weak, soft, and a little quicker than in health.

"An increase or severity of these symptoms, premonish an attack which forms the most serious state of this disease, in which case

"The *chills* assume a degree of oppressive anguish to the suffering patient, which to some has been more intolerable than any other symptoms, and recur frequently during the first twelve hours; many, however, do not suffer these chills to this excessive degree:

"The *pain in the head* becomes more excruciating, and is not confined to one part; the forehead, back and sides are alternately affected:

"The *eyes* feel heavy and painful, and their vessels become more turgid with blood, which gives them a dull red appearance:

"The *face* exhibits a universal flush in those who in health were not marked with distinct red cheeks, those who were, now have their cheeks more of a *livid* than red colour:

"A pain more or less severe in the *right side*, in the region of the gall bladder, passing up towards the neck, and settling between the shoulder blades:

"Faintness, delirium, a suffocating sensation across the *breast*, with little or much difficulty of breathing, catching at half inspirations, as if the lungs could not be filled with air, not from a painful sensation, as in pneumonic affections, but an apparent repugnance in that organ to inhale, as if the air were noxious or impure.

"*Tongue* continues pale in most cases during the continuance of the fever, though in some few instances dry, (and then only for a few hours at a time) and of a yellowish or light brown cast, *fur* trifling.

"Pain in the *back* and *extremities* much increased.

"A cough and difficult expectoration usually attend. The phlegm is in many cases accompanied with a little blood, but mostly only tinged with it, evidently owing to the violent exertion of coughing, or it probably issues from small ruptured blood vessels about the throat.

"The state of the *stomach* appears the same as in common bilious fever, being more or less affected with nausea at the commencement. Some vomit, others incline to vomit, or feel but the slightest degree of nausea. When the vomiting is spontaneous, the matter thrown up is invariably yellow or green coloured.

"The *bowels* exhibit nothing peculiar until acted on by medicine.

"The *skin* easily disposes to moisture after the stomach and bowels have been well evacuated. I have found it unnecessary, in most cases, to encourage perspiration by warm drink; an additional blanket or two will suffice, if the patient does not readily sweat under the usual covering.

"The approach of *death* is indicated by a cessation, for many hours, of all distressing symptoms, respiration, instead of laborious, now becomes less difficult, though short and hurried, and seems to

excite little uneasiness: the countenance and surface of the body become livid, or of a lead colour, resembling the body of a drowned person; the patient, and attendants, unaccustomed to these appearances, are flattered with the hope of a recovery."—p. 20—23.

In some further remarks on the nature of this disorder, the author remarks, "That the affection of the lungs in this disease is not primary, but sympathetic, appears to me as clear as the sun at noon day," p. 27. In support of this opinion, he states the powerful efficacy of emetics and cathartics in unlocking the biliary vessels by which the oppression on the lungs "immediately yields or vanishes." We are not disposed to controvert the theory Dr. Y. wishes to establish, provided a successful mode of practice be the result. But for ourselves we cannot admit the position attempted to be maintained, that the prominent characteristic of the disease evinces its bilious nature; and the facts which have come to view from the dissections which have been made of those who have died of this epidemic, instead of proving the liver to be the "reservoir," whence the noxious matter of the disease is diffused through the system, clearly establish the fact that we must look to a very different part as the principal seat of the mischief. We therefore cannot but object to the name by which Dr. Y. has distinguished this disorder.

His method of cure is thus briefly stated.

"The *method of cure* which I have pursued in this disease, I shall state in a few words. When called to a patient labouring under the symptoms of this fever, my first prescription is, *in all cases*, an

"EMETIC of tartarized antimony, sometimes combined with *ipecacuanha*, and sometimes with *calomel*. If this operates, the discharge from the stomach is in *every case* yellow or green bile in

great quantities, sometimes mixed with or followed by a whitish, slimy, compact substance; if it operates on the bowels, their discharges are dark coloured, mixed with green bile; and are generally *very fœtid.* If the emetic does not operate as freely as I wish, I repeat the dose. I follow this prescription, notwithstanding it may have operated on the bowels, with a cathartic of jalap and calomel. I hardly recollect a case in which a cathartic did not operate on its first exhibition. I have in no disease found the bowels more susceptible of being moved by a single dose. The cathartic always produced copious evacuations of bilious matter, sometimes assuming the appearance of *strong lie.* An additional dose on the third day of the disease, often cured my patient in the *milder attack.*

"In the *severer attack,* I commence in the same manner, with first an *emetic,* and then a *cathartic;* if the symptoms become stronger or more violent, my exertions are proportionably so to evacuate the contents of the stomach and intestines.

"If the patient grows weaker, and the symptoms do not abate, I repeat the emetic; this throws up in some cases greater quantities of bilious matter than the first I administered. Relief invariably succeeds this last evacuation. I now continue cathartics in smaller doses, but often repeated; for this purpose I have chosen of jalap and soluble tartar equal parts; of this compound I gave twenty grains every two or three hours, so as to keep the bowels in motion until the pain in the side and distress of breathing yield; after which I continue it in a limited degree until the evacuations change to a more natural colour, which is generally not till the 6th or 7th day. It is very common for the patient, while in a state of apparent convalescence, to have suddenly a return of pain in the head, or side, and distress in breathing. I now again have recourse to a powerful emetic, and this relieves the patient immediately after its operation; the discharges are as copious, and to appearance, as bad as they were in the first stage. These pains always indicate a collection of morbid matter.

"I have not, since the 26th of January, given *any other medicine* in this disease than emetics and cathartics. My whole atten-

tion is confined to a removal of the morbid bilious secretions which are unquestionably collected, and continue pouring into the gall bladder: probably giving rise, by distending that viscus, to the pain in the right side.

"I have not found it requisite in any case to use medicinal tonics to restore my debilitated patients; whenever the bowels and liver resume their natural and healthy action, the appetite returns, and food becomes the best and most natural tonic, beginning with weak soups, and gradually proceeding to more solid substances."—p. 23—25.

We have nothing to remark upon the treatment adopted by Dr. Y.; it doubtless proved very successful in *his* hands, as he has mentioned. The letter of Dr. Mann, and the dissertation of Dr. Stearns, appear next in order in the Essay. They are inserted at length in the present number of the Register, and are left to the judgment of the reader. Of the notes which our author has annexed to them, we are constrained to say, that they are not written in the temper we could wish, and which, indeed, the respectability of his opponents and the nature of the subject required. After all, the theory which Dr. Yates has advanced of the nature, seat, and proximate cause of this disease, is, in our opinion, insufficient and unsatisfactory; and the attempt to explain the phenomena of general disorder which pervades the system in this epidemic, by referring them to the *liver* as their source, is indeed taking a limited and local view of the subject. The best part of Dr. Yates' performance is that which contains his animadversions upon the unjustifiable and destructive stimulant practice of treating the epidemic, and for his early and salutary remarks we present him our warmest thanks.

DOMESTIC INTELLIGENCE.

THE EPIDEMIC NOW PREVAILING IN THE STATE OF NEW-YORK.

THROUGH the liberal exertions of our friends we are enabled to present our readers the valuable communications which follow, on the epidemic now prevailing in this state. The interesting nature of the disease itself, the great anxiety which it has created, and the alarm which is already produced in this city by the appearance of some few cases of it, have induced us to occupy more of our pages with the discussion of the subject than we otherwise would have done. From an attentive perusal of these communications, as well as of those in the preceding part of the Register, we are persuaded that the disease is not of that fatal nature which many have represented, and that the mortality which has attended it, has been caused, in most instances, by the empirical and unjustifiable practice that has been adopted. The letters of Dr. M'Reynolds and of Dr. Hudson deserve to be particularly attended to, from the important accounts which they have given of the morbid appearance upon examination after death.

An Account of the Epidemic as it lately prevailed at Black Rock, near Buffalo, in 1812, *in a Letter from J. D. M'Reynolds, Surgeon of the Army, to Dr. S. Marshall, Surgeon at the Navy Hospital, New-York. Communicated to Dr. Hosack by Dr. Marshall.*

Black-Rock, Niagara River, Jan. 20th, 1813.

Sir,

HAVING seen, in a late New-York paper, a statement relative to the extent, fatality, and treatment of the prevailing

epidemic in this neighbourhood, I am induced to believe, from the treatment therein mentioned, that you have not seen a correct history of the disease. Under that impression, I transmit the following account, believing you are interested in the nature of a malady that has produced greater mortality on this station, than the sword of the enemy at every other, since the declaration of war. From the 15th Oct. to the 26th Nov. (the date of its commencement,) there was one continued rain, with few exceptions; the wind s. w. during which time the soldiers and seamen were equally exposed in open tents. At the date last mentioned, the wind was w. N. w.; nights cold The symptoms of the disease, were a slight chill, violent pain in various parts of the thorax, generally on the right side; laborious respiration, great thirst, great loss of strength, and unwillingness to motion; a depressed irregular pulse, that became full and open after blood-letting, though sometimes the disorder required the second, third, and often the fourth bleeding before this effect was produced. There was but little cough in the first days of the disease, but abundant evidence of a continual irritation in the bronchia and trachea. Death sometimes succeeded within forty-eight hours from the first attack, though most generally not until the third or fifth day; prior to which, all the symptoms became more violent, and the patient died of suffocation. Some patients, a few hours preceding death, had all the symptoms of phrenitis. I supposed it a pneumonic inflammation, and prescribed for my first patient, blood-letting, epispastics, cathartics, and sudorifics; he, however, died on the third day.

I examined his body, and in a few days, five other bodies; opportunities occurring almost every hour, from the number of troops stationed at this place. The appearances after death were a high state of inflammation in one, and sometimes each of the lungs, a large quantity of extravasated serum; and a

morbid adhesion of the lungs to the pleura. In fact, there was no part of the thoracic viscera exempt; in some the pericardium, in others, the mediastinum, or diaphragm appeared to have been most inflamed. I observed in no case, a diseased state of the liver: except in the superior part, a slight degree of inflammation, from its contiguity to the diaphragm, when that membrane had been much affected. I mention this particularly, from the circumstance of some surgeons of the army having examined a body that exhibited some marks of a diseased liver. There can be little doubt but that in this instance, the subject must have been affected with some hepatic disease before taken with pneumonia. The great want of success that had attended the limited use of the lancet, induced the physicians to change their plan of treatment to stimulants and cordials. To this all the practitioners of the neighbourhood and army subscribed, (Dr. Young, of the 14th regiment, excepted,) which gave rise to the note I observed in the New-York paper. From this statement you will pronounce the disease, the pneumonic inflammation of Dr. Cullen; as such I have treated it, although I am pained with the recollection of losing nine patients under its influence. I am well assured, under different circumstances, the number would have been much less. The hospital being open and cold, my having to attend fifteen or twenty wounded, many of whom were officers; there being no marine guard to keep convalescents within the limits of the hospital, which is a half mile distant from the navy yard, prevented my seeing patients for twelve, and often twenty-four hours after the commencement of the disease; and you well know it is a prominent feature in a sailor's character to keep off the sick report as long as possible. Through this loss of time in the commencement I attributed the major part of the deaths; the violence of the inflammation being such as to destroy the vitality of the part.

Observations on the treatment. I ascertained that active cathartics were not advantageous in the cure, on account of their weakening the powers of life without abstracting the excitement. I preferred sulphate of soda, senna and manna. Sudorifics have been of but little service, either from the state of the apartments in which the sick were confined, or the nature of the disease. Blisters, after copious venesection, gave ease in translating the excitement. I gave, during the first three days, a powder of calomel and ipecacuanha, three grains each, every three hours. I employed the serp. virgin. rad. and dressed the blisters with ung. mer. fort. In all cases where a slight ptyalism was produced, the patient became evidently better. Great advantage was derived from the inhalation of steam, and from the warm bath, *but all medicines were useless if not preceded by an early and bold use of the lancet.* I have had more than seventy patients of the disease, and have twelve at present, and am myself convalescent. I am informed that the citizens suffer much from the influence of a disease that has become doubly mortal from the injudicious and imprudent publications that have recently appeared.

I am, with respect, Sir, yours,

JOHN D. M'REYNOLDS.

Dr. S. Marshall.

N. B. Our seamen had been removed on board several small vessels, some time before the commencement of the epidemic.

Remarks on the Epidemic of this State, in a Letter from Dr. Daniel Hudson, dated Geneva, January 12th, 1813.

THE pestilential epidemic, which has for some time past been raging on the Niagara frontier, is now making its appearance in our neighbourhood, and seems to have excited some alarm, from a belief that it is of a contagious character. I have been requested to give a short description of the nature of this disease, with a view to quiet fears which are altogether groundless. Having been constantly employed in cases of this destructive malady, from its commencement at Niagara, I am, from actual experience, enabled to assert that it is not of that class of diseases which may be communicated by contagion.

The cold humid state of the atmosphere, for some months past, has, no doubt, been a powerful agent in producing a predisposition to pestilential and inflammatory diseases. In addition to this, our unfortunate army has been unavoidably exposed to hardships, fatigues, and privations, which are incident to a campaign at a late season of the year, and in a new country. The most common form in which it makes its attack is with cold chills, succeeded by acute lancinating pains in some part of the thorax, which are greatly aggravated by a full inspiration. The pain is sometimes more severe in one side than the other, and sometimes occupies the whole region of the chest. The pulse becomes full and frequent, the respiration difficult, great thirst, furred tongue, and frequently a severe pain in the head. In those cases which terminate fatally, these symptoms increase; respiration becomes much hurried, painful, and laborious, a rattling in the throat, profuse expectoration, sometimes streaked with blood, a ghastly appearance of the countenance, cold feet and extremities: the difficulty of respiration continuing, the patient, as if

suffocated, expires in the most distressing agony. In other cases the disease, after a few days, assumes the typhoid type, and is sometimes, though not always, connected with the last mentioned symptoms, and in this complicated state puts a speedy termination to the life of the patient. The blood, when drawn, exhibits the most unequivocal signs of extensive inflammation. The following are the appearances on dissection.

The heart, pericardium, lungs, pleura, and diaphragm are generally found in a state of inflammation: in some instances, the liver is inflamed, commonly that portion which lies in contact with the diaphragm. In some cases a complete hydrothorax is found to have taken place; the pericardium containing a pint or more of water, of a semi-transparent or pearl-coloured appearance, and the cavity of the thorax a quart or more of the same kind of fluid; the heart much enlarged and abraded of its fine delicate membrane; the lungs adhering to the pleura, and much diminished in size, when the hydrothorax is very considerable.

I have, in this statement, given a description of the disease in its most violent form; but as it makes its attack with different degrees of severity, it is obvious that the method of treatment will require to be graduated accordingly. I consider this disease as in nowise different from peripneumonia, excepting, that a more general inflammation commonly takes place than what that disease has heretofore assumed. This, however, is referable to the pre-disposing causes above mentioned, as well as to the immediate exciting cause, which is generally that of a violent cold.

I am well aware, that much clamor has been raised against bleeding, the propriety of which, in some cases, and in some stages of the disease, would be very questionable; but from my own observation, in more than one hundred cases, and from the authority of Dr. Craige, (whose experience in this

complaint has been very extensive, and in whose skill and veracity I have much confidence,) I am prepared to assure the public, that in recent and violent attacks, bleeding is indispensable: blistering and profuse sweating also have been of eminent service. If the disease assumes the typhus symptoms, nothing has proved so successful as mercury, exhibited in such a manner as to produce ptyalism. If much acute pain remains during this stage of the disease, stimulants are not found so successful as in common cases of typhus; the stimulating plan, therefore, if entered upon, should be conducted with great caution, for if much inflammation remains it will bring on a recurrence of all the symptoms in an aggravated form.

DANIEL HUDSON.

Geneva, Jan. 12, 1813.

Observations on the Prevailing Pneumonia of New-York, in a Letter to Benjamin Waterhouse, M. D. &c. from James Mann, M. D. Hospital Surgeon of the United States Army; published in Jan. 1813.

Dear Sir,

At the time of making the statement, which first appeared in the Vermont Centinel, respecting the sickness among the soldiers of the army, at Burlington, and which was made public with the sole view of counteracting false and exaggerated reports; it was my intention, when more at leisure, to give in detail, a particular history of the disease, not only as it appeared at Burlington, but at other cantonments of the army.

The prevailing epidemic is denominated by nosologists, Pneumonia. Its attacks are made under the various forms

of *sthenic* and *asthenic* diathesis, while those varieties of the disease mostly depend upon the habits established prior to the attacks. In many of the first cases, among the soldiers at Burlington, the disease proved fatal in a few days, in some instances, within twenty-four hours. The following are the most prominent features of the disease, under its most deadly form: heat of the body below the standard of health, extremities cold, pulse contracted and hard, not so hard as is usually found in pleurisies, which indicates the necessity of bleeding; respiration very laborious, not apparently so much from sharp pains through the sides and breast, as from a sense of suffocation. When asked, the patient says, that he does not feel much pain, but a weight upon the chest, an oppression arising from inability to inhale the air; a sensation, one would imagine, similar to that which might be produced by breathing atmospheric air deprived of its oxygen. This suffocation, accompanied with small pulse and general coldness, may be the consequence of some condition of the lungs, which renders that organ incapable of absorbing through its membranes, in due quantity, the vital principle of the atmospheric air, or its oxygen. There is often a copious expectoration of glairy viscid phlegm, sometimes uniformly coloured, or streaked with blood, while no relief is procured by its discharge from the bronchial tubes. The above form of disease is the PERIPNEUMONIA NOTHA of the ancients, and it is not unworthy of notice, that it generally falls upon those who are in habits of intemperate potations of spirituous liquors. Upon laying the chest open to view after death, there is the appearance of inflammation upon the lungs, and congestions within the vessels of that organ, with adhesions to the circumadjacent parts, without suppuration; its surface covered with a yellowish, gelatinous, semi-putrid extravasation; its spongy texture is lost, and assumes, in some measure, the firm compact state of the liver. The physician, in the above described

cases, hesitates, and cautiously employs his lancet. These cases, however, are few, compared with the multitude seized, which generally proved fatal under every method of treatment: while a fortunate administration of stimulants, in a solitary case of the disease within my knowledge, induced by an indiscriminate use of them, a most deadly practice. Such a practice was introduced, for a short period, by a physician who was called to attend the sick, at a time when the physicians of the army were overburthened with numbers. Could you have believed, that at this enlightened period, brandy and wine in profusion, with soups, were the remedies principally depended upon by him in every form of these pneumonic affections? However, prior to the employment of stimulants, an emetic and cathartic were administered; blisters were employed; the lancet was forbid by him under every form of this formidable epidemic. It has been already observed, that cases occurred where the physician hesitates and doubts the propriety of bleeding. The cases under this type are not one in twenty. It is worthy of notice, that in two, which came under my observation, where blood-letting was cautiously employed, the accidental opening of the orifice, during a restless night, produced so much relief, even a solution of the fever, as led to a persuasion, that in some instances, where the disease had proved fatal, bleeding had been employed with too much timidity. In one case, the patient apparently sinking under the above form of the disease, seemed to be rescued from the grave by six grains of opium, administered in divided doses of one grain every two hours, and a tea-spoonful of æther every half hour. The same treatment in other similar cases, was not attended with the like success.

In all cases of the above form of the disease, blisters are employed upon the sides, breast, and back; in some, these seemed to be of use. Where the body is torpid and cold,

sinapisms, warm and heated applications to various parts of the body, especially to the lower extremities, are necessary. It is proper to observe, that neither the stimulant, diaphoretic, nor depleting method of treatment is but seldom accompanied with success, in the most violent form of the disease. Its progress is rapid, and assumes in a few hours, the strongly marked symptoms of approaching dissolution; and it may be added, that even where suffocation with a rattling is commenced, and the heart ceases to perform its office, that the muscular strength of the patient is not remarkably impaired. Several have been seen to walk the room a few hours before death.

Much the largest number seized with this extensive epidemic, are under a *sthenic* form, with strongly marked symptoms of inflammation, and require the depleting and antiphlogistic method of treatment to its full extent. Stimulants here evidently hasten the patient into the first described fatal state of the disease. At the first attack, with strong arterial action, pains through the sides and breast, much heat, difficult respiration, little or no expectoration, and this tinged frequently with blood, bleeding is employed, from one to two pints. It is often necessary to repeat the operation. In a few instances two quarts have been drawn from the arm of the patient in the course of the fever with good effect. A cathartic of jalap and calomel, or calomel per se, is then administered. This, it is found necessary to repeat in some cases; but as the disease is frequently accompanied with diarrhœa, drastic purges are employed with caution. The diarrhœa, at times, is so profuse, that cathartics are not indicated while it is necessary to check these alvine discharges by opiates. The diarrhœas, which accompany this fever are not critical, they are not checked as the fever abates, except by opium: remaining obstinate for a long time even after the return of the appetite. After bleeding and cathartics,

under this form of pneumonia, calomel in small doses, combined with opium, is administered with benefit; and where a gentle spitting is produced by its employment, pain in the breast is mitigated, or abates, laborious respiration subsides, copious and laudable expectoration, and moist skin supervene. To promote these last, vin. antim. and elix. paregor. prove an excellent medicine. When the antimony occasions too frequent evacuations by the bowels, small and repeated doses of pulv. dover. are substituted. When, after the inflammatory state of the disease is in a measure removed, more especially, where nausea and anorexia exist, emetics of ipecac. are advantageously administered. Blisters, in the course of the disease, are indispensable to remove stitches in the breast and sides, after blood-letting is carried to its proper extent; believing with others, that there is a blistering, as well as a bleeding, and emetic period in fevers, the bounds of which being ascertained, should never be intruded upon by each other. As this disease has not been confined to the soldiers of the army, but has made its attacks and ravages in various places, about the same time, over a very extensive tract of country, it may be fairly inferred, that its spread far and wide is not the consequence of its contagious nature, any more than it is the effect of severe duty, negligence of officers, want of the necessaries of life, as it has appeared among the soldiers, as has been repeatedly represented in the public papers. It may be viewed as an epidemic produced by some latent cause: an unknown state of atmosphere, and, like all extensive epidemics, is more severe and fatal to such as are unavoidably, and in many instances, imprudently exposed to various additional exciting causes. Those who have attended to the progress of epidemics, may have observed, that among thousands who have been subjected to their influence, that a few have been treated with severity by the disease, and some have fallen victims to its rage; while the deaths

which have occurred, might be imputed much less to the nature of the epidemic, than to the various exciting causes which co-operated to produce its mortality. The first, perhaps, in all cases, cannot be avoided; while the exciting causes, giving to the disease a severe or fatal form, is within the ability of man to obviate. Among the various exciting causes productive of a severe disease, under the present epidemic, only one will be noticed, viz: an intemperate use of ardent spirits. It is a fact, well known among the physicians of the army, that the disease has been fatal mostly among the men who are in habits of great intemperance. It has been also ascertained from various sources, that this disease has been most severe and fatal among that class of citizens who indulge in spiritous potations. It is a vulgar and mistaken opinion, that the use of spirits secures the body from the attacks of disease, and fortifies it against cold, or its effects; so far from effecting either of these, ardent spirits aggravate the injurious consequences of cold, and frequently predispose the body for the reception of a disease, under its most severe and perhaps mortal form.

Is it not a singular fact, that no notice is taken of the prevailing epidemic, and its mortality, among the citizens, by the several printers, when with much avidity they swell their columns with exaggerated reports of the disease, and its disastrous effects among the soldiers? Since it is well ascertained, that less in proportion to numbers who have been attacked with it, have become victims in the army, than among the citizens; although the last are better accommodated in houses, less crowded than hospitals, and surrounded by friends for nurses, generally more assiduous and attentive to their wants when sick, than soldiers, who are bound to each other by ties less strong than those of consanguinity. Is it a new and singular circumstance, that soldiers are more subject to diseases than citizens, independent of latent atmospheric

agents, as causes? When it is known, that more than four thousand soldiers have been seized with this epidemic, will it appear strange and mysterious that many deaths have occurred, and the officers not be implicated among the causes of the disease and its fatal event; when citizens are daily falling under its effects in towns and villages far and wide, in every district of the country. After being acquainted with the above facts, will it appear candid or ingenuous to state, that the physicians of the army are *ignorant*, more *ignorant* than the physicians of the country. Are not the means of information open equally to all? Were not the physicians of the army educated at the same school with the citizen practitioner? Did not government, out of a flood of applications, select and appoint those who had the fairest pretensions?

The communication is concluded by observing, that there is no essential disagreement among the physicians of the army, respecting the nature of the prevailing epidemic, and method of treatment. That it is not a new disease, as has been represented by some, the physicians of the army are all agreed. Perhaps it would appear invidious to say, that the epidemic is represented a non-descript by some physicians, as an apology for the want of success in the management of it. In consequence of the swelled accounts of the deaths in the cantonment at Greenbush, where there were from one thousand five hundred to three thousand, during the summer and autumnal months, and through which more than seven thousand men have passed since the month of May, and at which place have been left all their sick, and many of their convalescents, while passing, it may be necessary to state, that the whole number of deaths at this post, from that period to the present, does not exceed eighty-five.

With much respect, I am, &c. JAMES MANN,
Hospital Surgeon, U. S. Army.

Dr. Benjamin Waterhouse.

Remarks on the Prevailing Epidemic, by John Stearns, M. D. of Albany. Read before the State Medical Society in February, 1813.

ALTHOUGH a few sporadic cases of the epidemic, which now prevails in this city, and the country adjacent, made their appearance in the fall; it was not till the middle of December last, that it began to be much noticed. From this time it gradually increased to the present period.

The symptoms which characterise this disease, are:

1st. Cold chills, which, in some instances, continue twenty-four hours, and are sometimes succeeded by a temperature, unequally distributed over the surface; while the face and trunk of the body are of a heat higher than natural, and considerably flushed, the extremities are cold. In some instances the chills are but slight; the violence and danger of the disease are generally proportioned to the length of the chill.

2d. Great and general prostration of strength, frequently accompanied with fainting.

3d. Extreme pain in the head, thorax, and sometimes in the extremities, accompanied with dyspnœa and hurried respiration; when the pain assails the head with severity, it generally terminates in delirium. The pain is sometimes severe in the back part of the head and neck, but generally affects the forehead, producing an extreme soreness in one, sometimes in both eyes. When the pains are not violent, the patient complains of a vertigo, and a dull, heavy sensation in the head, with an oppression at the stomach, nausea, and sometimes vomiting.

4th. The tongue is generally, at first, dry and covered with a white fur, which, as the disease advances, is in some instances converted to a dark brown.

5th. In violent cases, the face appears tumid and livid; the eyes are remarkably protruded, exhibiting a y ellow aspect.

6th. The urine generally flows in unusual large quantities, and is sometimes very high coloured.

7th. The pulse in the incipient stage is small, weak, tremulous, and in some instances suspended; as the cold stage subsides, the pulse rises, but seldom to a degree of natural strength or fulness; it appears to labour under a violent oppression, is often irregular, and generally slower than natural.

8th. The stomach is generally loaded with a vast quantity of gelatinous slime, which in tenacity resembles the white of an egg.

9th. When a diarrhœa does not usher in the complaint the bowels are torpid and extremely costive; ordinary cathartics seldom produce their customary effects.

10th. A cough, with an expectoration of yellow mucus tinged with blood, in some instances, commences with the disease; as it advances, clear blood is often discharged from the lungs and nose.

11th. A viscid sweat is generally thrown out upon the surface spontaneously, which is never critical, and if copious, is always injurious.

This viscous fluid is not confined to the surface. The saliva, gastric juice, and, indeed, every secreted fluid participates of the same disposition, and evinces a morbid affection of the whole secreting system.

The preceding phenomena indicate the existence of a disease entirely unknown in this section of our country. It appears to participate of two distinct and opposite natures; *pneumonia* and *typhus*. A peculiar constitution of the atmosphere appears to predispose the system to a typhus fever, under circumstances peculiarly favourable to the pro-

duction of pneumonia: hence that state of disease is induced which may be denominated *Typhoid Peripneumony*, or Pneumonia Typhodes; a disease which, in some respects, strongly indicates the free use of the lancet, and in others, the liberal administration of stimulants. Hence originates a contrariety of treatment, which experience has proved to be very injurious to the patient: while some bleed copiously, others resort to the most powerful stimulants. When the prominent and opposite symptoms of this disease are nearly balanced, prudence would dictate the use of neither of these classes of remedies; while depletion increases the symptoms of typhus, powerful stimulants produce delirium, and aggravate all the fatal symptoms of pneumonia. It is only when one of these classes of symptoms clearly and distinctly predominates, that either of these remedies are ever proper. Indiscriminately to condemn both in all stages of the disease, therefore, evinces an imperfect knowledge of the complaint, and is the height of absurdity and presumption.

This is the same disease that prevailed in some parts of this and the eastern states, during the last winter, and is exclusively confined to this season of the year. It prevailed in England in the year 1685, and was faithfully described by Dr. Sydenham, under the name of the winter fever, which in a subsequent treatise, he denominated the *new* fever. In attempting to account for the origin of the fever, he traces its causes to the plague, which had preceded it a few years, and of which he considers this as completely "depuratory." Since his time we do not find it described as prevailing in any country till the year 1811.

"Doctor Macbride considers it as a mixed fever, and terms it *febris hyemalis*. Sauvages, a species of Synochus, and names it *synochus hyemalis*, though he thinks it merits more the denomination of *catarrhalis*. Both these authors have taken their account from Sydenham. Dr. Cullen classes

it as a variety of the synocha, or inflammatory fever. Huxham, in his observations *de aere et morbis epidemicis*, describes a fever, which he says nearly resembles this; and Dr. Swan thinks the mild catarrhal fever of Hoffman, which that author so accurately describes, and treats with so much judgment, bears to this a great similitude."—WALLIS.

After premising this brief sketch of the symptoms and history of this disease, I shall proceed to examine the remedies which have been prescribed.

1st. *Bleeding.* This, as I before observed, is extremely hazardous, unless symptoms of pneumonia or synocha decidedly predominate, and even in this case it should be used with extreme caution, and in small quantities, otherwise the typhus tendency of the disease prevails, and the patient sinks and dies. I have seen but one case in which it was indicated, and in which I took but four ounces.

Letters from eminent practitioners in some of the counties where it prevailed the last year, inform me, it was occasionally practised there with success. This was the practice of Sydenham, and is used by many the present season.

2d. *The warm bath.* In this disease the blood recedes from the surface and extremities, accumulates in the large vessels, and completely oppresses the action of the heart and arteries. A universal coldness and frequent chills consequently pervade the whole surface of the body till the torpor of the extreme vessels is overcome.

The first indication of cure is, therefore, to restore action to the surface and extremities, and thence to preserve that equilibrium of the circulation which has been entirely destroyed.

This indication is successfully answered by the total immersion of the body in warm water, in the incipient stage of the cold chill. If the warm bath is applied at this early period, the disorder is effectually subdued in forty-eight

hours; but if delayed till the cold stage is considerably advanced, its operation is less efficacious.

Immersing the extremities in warm water, and general fomentations to the surface, may be substituted when the warm bath cannot be procured. This should be continued till the chills have entirely subsided; it should then be discontinued, otherwise the copious sweats thereby induced will debilitate and sink the patient, or accumulate the morbid heat of the system, and thence induce delirium. Warm diaphoretic teas should accompany the use of the warm bath.

3d. *Emetics.* When the head is affected with pain or a vertigo, or a dull heavy sensation, accompanied with an oppression at the stomach, or a nausea and vomiting, an emetic is indispensably necessary. It invariably ejects a quantity of cold, viscous slime, which resembles, in tenacity and colour, the white of an egg. If this fluid is not evacuated, a torpor of the stomach and bowels ensues, which enhances the danger of the disease in its progress, and essentially impedes the cure.

When the emetic has been given early in the disease, and its operation proves effectual, the preceding symptoms readily yield; but if they continue obstinate, the emetic may be repeated, and succeeded by

4th. *Cathartics.* Calomel, or calomel and jalap, if given early in the disease, and repeated as the symptoms may require, soon obviates the obstinate costiveness of the bowels, and restores their natural tone, by evacuating their extremely offensive and debilitating contents.

5th. *Diaphoretics.* Although profuse and long continued sweats are evidently injurious, as they induce debility without, in the least, promoting a crisis, yet a naturally soft and moist state of the skin is always accompanied with a mitigation of the pain, and ought ever to be encouraged. To promote this object, I make a liberal use of snake root, sage,

boneset, or hemlock tea, and every four hours, or oftener, if necessary, give a powder very similar to Dover's: to this powder I sometimes add calomel, if the pneumonic symptoms do not readily yield.

6th. *Epispastics.* When the pains in the thorax are violent, and respiration difficult, and do not yield to spiritous fomentations, I generally apply a large blister to the breast or side. In most cases the fomentations will succeed alone, and are more efficacious than blisters.

7th. *Demulcents,* occasionally combined with opiates, are necessary to alleviate the cough and pains of the breast.

This course of treatment will generally promote a crisis in five days, and sometimes sooner; but should the disease be protracted to the typhus stage, the remedies usually prescribed in that type of fever then become necessary.

Meteorological Observations, by Capt. Alden Partridge, of the Military Academy, West-Point, N. Y.

METEOROLOGICAL TABLE,

Containing the results of a series of Observations, made at West-Point, State of New-York, from the 5th of April to the 1st of November, 1810.

	THERMOMETER.					BAROMETER.				REMARKS.					
MONTHS.	No. of observations.	Greatest degree of cold.	Greatest degree of heat.	Mean temperature.	Greatest variations.	Difference of temperature between each succeeding mo.	Greatest altitude.	Least altitude.	Mean altitude.	Greatest variations.	Date of the greatest degree of cold in each month.	Date of the greatest degree of heat in each month.	No. of pleasant days.	No. of days on which rain fell.	No. of cloudy days without rain.	No. of days pt. clear & pt. cloudy.
April.	73	33°	80°	60°	47°		30.00	29.16	29.60	80	11th. e.r.	27th. P.M	12	7		6
May.	86	37	94	66 1-10	57	6 1-10	29.33	28.94	29 59	89	8th. do.	29. 4 P.M	13	8	1	4
June.	85	52	86	72 3-4	34	6 13-20	29.85	29.40	29.61	45	8th. do.	16 & 17.	13	13	1	3
July.	70	65	88	76	23	3 1-4	29.80	29.38	29.59	42	2d.	12th. do.	15	13	1	2
Aug.	90	49	90	74 1-2	41	1 1-2	29.80	29.30	29.58	50	31st. A.M	12th. do.	13	15		3
Sept.	90	46	84	66 2-3	38	8 1-6	30.06	29.56	29.76	55			14	9	2	5
Oct.	73	29	79	55 1-4	50	11 3-12	30.16	29.04	29.70	1.12			16	3	2	4
	567	29°	94°	67 2-7	65°		30.16	28 94	29.63	1.22			101	74	7	27

METEOROLOGICAL TABLE,

Containing the results of a series of Observations made at Norwich, State of Vermont, from the 1st of July, 1811, to the 1st of May, 1812.

		THERMOMETER.					BAROMETER.												
MONTH.	*No. of observations.*	*Greatest degree of cold.*	*Greatest degree of heat.*	*Mean temperature.*	*Greatest variations.*	*Difference of temperature between each succeeding ob.*	*Greatest altitude.*	*Least altitude.*	*Mean altitude.*	*Greatest variations.*	*Date of the greatest degree of cold.*	*Date of the greatest degree of heat.*	*Depth of snow in inches.*	*No. of clear days.*	*No. of days on which rain fell.*	*No of days on which snow fell.*	*No. of cloudy days.*	*No. of days pt. clear & pt. cloudy.*
July.	40	50°	92°	70 2-3	42°		29 17	28.71	28.91	.46	27th.	18th.		14	16		0	1
Aug.	90	45	92	70	47	2-3	29.30	28.75	28.67	.54	9th.	20th.		18	9		1	3
Sept.	84	31	85	65	54	5	29.24	28.55	28.94	.69	27th.	4th.		17	7		2	4
Oct.	83	17	75	47	58	18	29.42	28.50	28.99	.92	27th.	12th.	3 5-10	13	12	2	3	1
Nov.	82	12	51	32 1-2	39	14 1-2	29.44	28.40	28.95	1.04	26th.	9th.	5		7	13	3	4
Dec.	87	-16	48	19 1-2	64	13	29.20	28.09	28.74	1.11			23 9-10	3	2	8	9	9
Jan.	88	-24	36	14	60	5 1-2	29.23	28.09	28.60	1.14	18th.	26th.	23 4-10	3	0	16	6	6
Feb.	75	-31	35	15	66	1	29.14	28.15	28.77	.99	25th.	4th.	38		7	1	13	2	6
Mar.	86	- 4	51	24 2-3	47	9 1-3	29.25	28.45	28.90	.80	2d.	27th.	14 1-10	10	3	7	4	7
April.	79	23	65	40	42	15 2-3	29.26	28.36	28.89	.88	12th.	25th.	5		5	7	3	2	13
	794	-31	92°	39 9-10	123		29.44	28.09	28.83	1.35	Fb. 25.	Jul. 18.	112 9-10	97	70	52	32	54

Note.—The town of Norwich is situated in the east part of the state of Vermont, adjoining Connecticut river, and opposite Dartmouth College, in the state of New-Hampshire, in north latitude 43° 33'. The altitude of that part of the town where the observations were made, above tide-water, I found by a barometrical calculation to be 917 feet, and 629 feet above Connecticut river. In the second column of the above table, whenever the sign – is prefixed, it denotes that the thermometer was below cipher; thus, –16, denotes that thermometer was 16 degrees below cipher.

METEOROLOGICAL TABLE,

Containing the results of a series of Observations made at West-Point, State of New-York, from the 1st of April to the 31st of May, 1811, and also from the 11th of May to the 30th of November, 1812.

		THERMOMETER.					BAROMETER.											
MONTHS.	*No. of observations.*	*Greatest degree of cold.*	*Greatest degree of heat.*	*Mean temperature.*	*Greatest variations.*	*Difference of temperature between each succeeding mo.*	*Greatest altitude.*	*Least altitude.*	*Mean altitude.*	*Greatest variations*	*Date of the greatest degree of cold.*	*Date of the greatest degree of heat.*	*Depth of snow in inches.*	*No. of clear days.*	*No. of days on which rain fell.*	*No. of days on which snow fell.*	*No. of cloudy days.*	*No. of days pt. clear & pt. cloudy.*
1811																		
April.	90	27°	82°	52	55°		30.10	29.10	29.44	1.00	2d.	18th.	0	14	8	2	0	6
May.	75	40	77	60	37	8	30.06	29.10	29.66	.96	3d.	7th.	0	17	11	0	1	2
	165	27°	82°	56	55°		30.10	29.10	29.55	1.00	Apr. 2d.	Ap. 18.	0	31	19	2	1	8
1812																		
May.	59	46°	79°	61	33°		29.91	29.23	29.60	.68	17th.	31st.	0	3	9	0	1	7
June.	77	57	86	71 1-3	29	10 1-3	29.76	29.20	29.49	.56	5th	9th.	0	3	18	0	0	9
July.	92	56	91	76	35	4 2-3	29.60	29.40	29.53	.40	1st.	7th.	0	8	11	0	0	12
Aug.	78	63	87	73 1-3	24	2 2-3	29.85	29.40	29.60	.45	13th.	25th.	0	5	13	0	1	12
Sept.	89	48	81	66 1-3	33	7 8-15	29.98	29.27	29.72	.71	21st.	2d.	0	6	11	0	2	10
Oct.	57	40	78	55 2-3	38	10 8-15	30.00	29.20	29.66	.80	24th.	2d.	0	5	9	0	1	16
Nov.	89	22	67	44	45	11 2-3	30.16	29.08	29.57	1.08	25th.	5th.	0	5	7	2	3	13
	541	22°	91°	64	69°		30.16	29.08	29.60	1.08	Nov. 25	July 7	0	35	76	2	9	79

Note.—In the above, as also in all the preceding tables, the barometer used was graduated in French inches.

Literary and Philosophical Society of Liverpool.

This society, whose objects are similar to those of the Literary and Philosophical Society at Manchester, was instituted in February, 1812. The number of members already exceeds sixty; and their meetings are held monthly, from October to May, inclusive. The officers are, the Rev. *Theophilus Houlbrooke*, President; Rev. *Joseph Smith*, Dr. *Bostock*, and *John Theodore Kostor*, Esq. annual Vice-Presidents; Dr. *Thomas Steward Traill*, Secretary.

Address of the Students of the College of Physicians and Surgeons.

At the particular request of the chairman and of the students a place is given to the following address. The wishes here so ardently and so ingenuously expressed, we have the fullest confidence will be realized, and that at no distant day, the students of medicine will unite in resorting for instruction to this College, as the *medical establishment of the state.*—Ed.

At a meeting of the Students who attended the several courses of Lectures in the College of Physicians and Surgeons of New-York, held at the College Buildings, Pearl-street, on Monday the 2d of March, 1813; Wm. F. Quitman, *Chairman,* James Seaman, *Secretary, it was unanimously resolved, that the following Address of Thanks to the Professors be made public:*

The students of the College of Physicians and Surgeons, in the city of New-York, unwilling to suppress the emotions of gratitude they feel for the instruction they have received during the session of the college, just closed, avail themselves of this opportunity of manifesting, thus publicly, their acknowledgments. Sensible of the importance and dignity of the profession, of which they expect shortly to become members, it is with peculiar satisfaction they have witnessed the increased zeal and spirit of our legislative, and other public bodies, for the establishment and support of a state medical school. Every member of the community is vitally interested in whatever adds to the facilities of medical instruction; and the exertions of the legislature in organizing the College of Physicians and Surgeons in this city, have already produced effects the most important and beneficial. Public instruction can be effectually imparted only by means of public munificence; and it will not be disputed, that the science of medicine has the first claim to the patronage of a great and powerful state. It would be idle here to recount

the superior advantages which the city of New-York possesses for a great medical establishment. With a population equal to that of most of the capitals of Europe, and composed of inhabitants from all parts of the world; with a large and well endowed hospital, and other public charities; the student here may practically learn the nature of the various diseases which affect man in every part of the globe.

The honourable the regents of the university have done equal honour to themselves in the choice of such a place for a permanent medical college; in the extensive plan of medical education which they have formed, and in the selecting of those gentlemen whom they have appointed as teachers; for, in a science like medicine, depending so much upon observation, it is essential that the professor, in order to become the successful teacher, should unite to the knowledge derived from books, the experience arising from his own immediate observation.

To our distinguished Professor of Anatomy, Surgery, and Physiology, Dr. J. Augustine Smith, we readily tender our warmest acknowledgments. In vain would the student attempt the acquisition of correct anatomical and physiological knowledge without the practical views afforded by oral instruction. For the able and happy manner in which the complicated structure of the human frame has been unfolded, and the pointed application of this knowledge to the important duties of the surgeon, (and particularly for his attention to those subjects which more immediately belong to naval and military surgery,) we feel ourselves greatly indebted to the talents and exertions of Dr. Smith.

To our learned Professor, Dr. M'Neven, we are under many obligations for his course of lectures on chemistry. His free communication of the most recent discoveries and improvements which are daily adding fresh lustre to this science, evince at once, the industry with which he pursues

this branch of human knowledge, and the interest he takes in diffusing it.

To Dr. HOSACK, the Professor of the theory and practice of physic and clinical medicine, and lecturer on midwifery and the diseases of women and children, we take pride in thus declaring our emotions of sincere and ardent gratitude, for the elaborate courses of instruction he has given on the important branches committed to his care. His enlightened and liberal views of the profession; his minute and extensive acquaintance with the treasures of ancient and modern learning; his accuracy of observation, derived from the stores of his own ample experience; his judicious and extended application of the system of induction to medical philosophy; his impressive and ready method of communication, have imparted to his lectures the highest interest, and have left us in equal admiration of the science itself and of the ability of the lecturer.

Gentlemen, to you unitedly we present our congratulations, that the unprincipled attempts that have been directed against the institution to which you are so much devoted, have failed of success; and that the college still continues to flourish with increased vigour in defiance of the malice of its enemies.

WM. F. QUITMAN, Chairman.
JAMES SEAMAN, Secretary.

University of the State of New-York—College of Physicians and Surgeons.

At a meeting of the Board of Trustees of the College of Physicians and Surgeons of New-York, held on Saturday the 28th February, 1813, JOHN W. FRANCIS, M. D. was unanimously appointed Lecturer on the *Institutes of Medicine* and the *Materia Medica* in that College.

The American Academy of Arts.

PURSUING the plan announced in a former number of the Register, some account is now given of the *American Academy of Arts.*

The first step towards the formation of the American Academy of Arts, established in New-York, was made in this city in the year 1801. Among those who suggested the plan of so honourable an undertaking, and who have zealously patronized it, we might enumerate the names of many gentlemen of the first importance in the state. Of this number, we shall, at present, only mention John R. Murray, De Witt Clinton, Charles Wilkes, William Cutting, Peter Irving, and Edward Livingston, Esqs. This last named gentleman, who, at that time was mayor of the city of New-York, was chosen the first president of the society. As was to be expected, from an association voluntarily formed, and having for its object the most laudable purposes, no small degree of zeal was manifested by its members for its permanent establishment. Shortly after Edward Livingston, Esq. removed from the city of New-York, and the Hon. Robert R. Livingston was unanimously chosen the second president. The connection of this gentleman with the society may be reckoned among the most propitious circumstances connected with its history. Endowed by nature with a fine taste which he had long successfully cultivated; and possessing the most ardent desire for the aggrandizement of the society, his appointment as minister at the court of France, enabled him to gratify his wishes to the fullest extent. To his spirited exertions, while in that capacity, we are much indebted for the very valuable collection of statues, busts, &c. procured by the institution in 1803, a catalogue of which was published in the same year. To his instrumen-

tality also are we indebted for the rich assemblage of paintings and prints, presented the society by the Emperor Napoleon, who, at that time, with Mons. Barbe Marbois, and Vivant Denon, was elected an honorary member. Indeed, these presents, and the donations from his own private cabinet, are the most important of the collection in the possession of the academy, and are of themselves superior to any other in the United States.

From the period of Chancellor Livingston's return to his native country, in 1804, he took a no less active interest in the welfare of the society, and was annually re-elected the president until the time of his death, in March, 1813, when the Hon. De Witt Clinton, Esq. was chosen to succeed him.

We shall close this brief notice of the society with the insertion of the officers elected at their last anniversary meeting in February, 1813, and the subsequent proceedings of the institution upon the demise of their much lamented president

At a meeting of the American Academy of Arts, held at the government house on the 9th February, 1813, the following gentlemen were elected officers of the society for the ensuing year.

Hon. Robert R. Livingston, President.
John R. Murray, Esq. Vice President.
Hon. De Witt Clinton.
William Cutting, Esq.
Dr. David Hosack.
Robert Fulton, Esq.
Louis Simond, Esq.
} Directors.
Charles Wilkes, Esq. Treasurer.
John G. Bogart, Esq. Secretary.

At a meeting of the society, held on the 13th of March, 1813, the following resolutions were passed.

Resolved, That the members of the Academy wear the customary mourning on the left arm for thirty days, as an evidence of respect for the memory of their deceased president, the Hon. Robert R. Livingston.

Resolved also, That the Hon. De Witt Clinton be appointed to deliver a discourse before this Academy commemorative of the talents, virtues, and public services of the late founder and president of this institution. At the same meeting, the Hon. De Witt Clinton was unanimously elected president, and Cadwallader D. Colden, Esq. one of the directors of the Academy for the ensuing year.

The collection of the society is at present preserved in rooms, fitted up for that purpose, in the government-house in this city; but it is hoped that ere long, the institution will be enabled to procure more spacious apartments better calculated to answer the objects originally intended.

Successful Treatment of Spina Bifida.

Astley Cooper, Esq. of Guy's Hospital, London, has lately communicated to the public in the Medico-Chirurgical Transactions, vol. 2d. two cases of spina bifida successfully treated upon a new plan. As there is scarcely any modern improvement in medicine of more importance than this of Mr. Cooper, we shall detail, in his own words, his new method of treatment, the paliative and the radical.

"The first consists in treating the case as a hernia, and applying a truss to prevent its descent: and the second in producing adhesion of the sides of the sac, so as to close the opening from the spine, and stop the disease altogether. The

first is attended with no risk. The truss forms an artificial vertebra, when the natural is defective, a buttress which supports the part, and prevents the increase of the disease; but in this mode of treatment, the truss is required in future life; for if discontinued, the tumour re-appears, and will grow, as hernia does, to great magnitude, but with more fatal consequences. On the contrary, the adhesive mode of cure exposes the patient to much constitutional irritation, but leaves him without the apprehension of the future return of the disease."

"If the tumor is connected with an unnatural enlargement of the head, hydrocephalus internus is conjoined with spina bifida; and the water will accumulate in the ventricles, if the tumor in the loins is attempted either to be palliated or radically cured. If the lower extremities are paralytic, or the fæces and urine are discharged involuntarily, there is no hope of relief.

"If the tumour has burst at the time of birth, or bursts soon after, there is little hope of cure; for, although the opening in the skin may be closed by lint and adhesive plaister, and union be produced so as to admit of no further discharge of water, yet hydrocephalus internus will still succeed.

"The deficiency of the spine is sometimes so great as to lead to the production of a most extended tumour at the time of birth; and when this is the case, the nerves are so far protruded from the spinal canal as to injure the structure of the spinal marrow, and to render every attempt at cure unavailing.

"I should feel myself deficient in that liberality with which our profession ought ever to be marked, and usurping more than my due, if I did not state that the principle of the radical cure, as proposed for spina bifida, is similar to that recommended by Mr. Abernethy in his work on psoas abscess. The mode, however, which I have employed for the

purpose is, I believe, the only safe one, that of puncturing the part with a needle; for every opening of a larger size will be attended with the utmost danger.

"I have, for many years, used this plan in cases of ganglia, when I could not burst them by a blow, or excite their removal by pressure or irritation; and I have never seen it followed by inflammation or any serious consequence; and it may be used in cases of accumulations in joints, and other cavities, where larger openings are dangerous."

Aneurism of the Femoral Artery.

Mr. S——n, of the United States navy, in a duel which took place about two months since, was wounded in the right thigh, the ball passing through the limb in the vicinity of the femoral artery, and somewhat above the middle of the thigh. About two weeks after the accident the patient observed a tumour to be forming, which was attended with some throbbing. Dr. Marshall, the surgeon of the navy hospital, immediately examined it, and ascertained it to be an aneurismal tumour of the femoral artery. It increased in size so rapidly, that in about a week from the time it was first observed, it had extended at least to between four and six inches in diameter. The pulsation was also remarkably strong, and the whole limb became painful from the pressure so suddenly produced upon the parts affected. As the operation for femoral aneurism has been seldom performed in the United States, and Dr. Marshall considering it necessary that it should be done without delay, a consultation was thought proper, when Dr. Hosack and Dr. J. A. Smith were requested to visit the patient.

On the 1st of March, Dr. Hosack performed the operation by tying and dividing the artery a short distance above

the sac, at the same time securing the upper ligature, by passing a needle through the coats of the artery in the manner recommended by Mr. H. Cline. On the 13th day the ligatures came away. Since that time the wound has healed without the least impediment; the tumour is rapidly decreasing, and the patient recovering his general health. It is, perhaps, worthy of remark, that for the first two days after the operation, the limb was below its ordinary temperature, but immediately after that time it recovered, and has since steadily retained its natural degree of heat.

As the extent and situation of the tumour so nearly correspond with the case already related in this work,* we consider it unnecessary to add any further details.

Carotid Aneurism.

In February last the operation for an aneurism of the carotid artery was performed in the New-York hospital by Dr. Post, but we have not yet been enabled to obtain the particulars of the case.

Nectoux's Memoir on the Senna.

Mons. H. Nectoux, of the Institute of Egypt, has lately offered to the National Institute of Paris, a Memoir on the several species of Senna. He has particularly dwelt upon the Cassia Senna of Lin. which is the Cassia of Thebes; the Cassia Lanceolata of Lamarck, known as the Senna of Nubia; the Cynanchum Oleæfolium, with which the Senna is generally adulterated, and the Cassia Fistula of Linnæus, well known as the common Senna of the shops. The memoir is enriched with coloured engravings in folio.

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* Register, vol. 3d. p. 49.

Greenwich Type Foundery, New-York.

We regret that want of room prevents us, on the present occasion, from giving some account of the late establishment in New-York of *Messrs. E. White and Co's* improved and extensive foundery for the casting of printing types. In a future number we shall detail such circumstances, connected with the institution, as we are confident will prove acceptable to all who take an interest in the success of our native manufactures. All we propose to mention, at this time, is, that after the expenditure of much wealth, and with the most indefatigable industry for upwards of five years, Messrs. White and Co. are enabled to cast all the various kinds of types in common use, that is, all the intermediate regular sizes from nonpareil to great primer, inclusive. From the impression of numerous specimens of their make which we have seen, we are fully warranted in saying, that the types cast at the New-York Foundery, excel, in point of beauty and correctness, all that have hitherto been made in this country, and that they will not suffer by comparison with any imported. As evidence of the superior excellence of the type from this foundery, it may be sufficient to observe, that no other is ordered by the printers of New-York; and we are informed that some of the Philadelphia publishers have given orders to Messrs. White and Co. for extensive fonts, in preference to obtaining them from the establishment in their own city.

Charles Bell's Engravings of the Arteries.

Mr. Anthony Finley, of Philadelphia, has lately offered to the medical profession an American edition of *Bell's Plates of the Arteries of the Human Body.* The work is enriched

with fourteen coloured engravings, and the very superior and beautiful manner in which they are executed reflects the highest credit on the state of the arts in this country. Of a work already so well known and so much esteemed, it is unnecessary to say any thing in commendation. Mr. Finley proposes, if sufficient encouragement be given, to follow the present engravings, with those of the bones, muscles and joints, nerves and brain. If he receives the support he deserves, we have no doubt he will be enabled to complete the undertaking.

Observations on the Weather of the City of New-York, for the months of January, February, and March, 1813.

JANUARY.

The weather of the month of January was, upon the whole, of a moderate temperature, clear, and very pleasant. The thermometrical changes were inconsiderable, the mercury standing, the greater part of the time, at or about the freezing point; the wind chiefly from the westward or southward. On the 8th, which was the coldest day, the thermometer stood at 7 A. M. at 12, at 3 P. M. at 20, and at 7 P. M. at 19 degrees of Fahrenheit. On the 13th and 14th, a small quantity of snow fell, accompanied with wind from the N. W. From the 23d to the 26th, repeated falls of rain, with wind from the N. E. Snow again fell to the amount of five inches depth on the 27th. On the 31st the mercury stood at 7 A. M. at 17 degrees.

FEBRUARY.

The weather of February set in with considerable severity, and throughout the month was much colder than that of

January. On the 1st, the thermometer stood at 7 A. M. at 16, at 3 P. M. at 24, and at 7 A. M. at 29. From the 4th to the 7th the atmosphere was remarkably humid and overcast. On the night of the 10th, we had some snow. After this the weather again, though cold, became clear and pleasant. On the 18th the mercury stood at 18 degrees; this was the coldest day in February. Some snow fell on the 20th, on the night of the 21st, and on the morning of the 22d. On the 26th and 27th more moderate; wind N. W.

MARCH.

During March, like the same month of the preceding year, we experienced many overcast and rainy days, and many sudden and great changes in the temperature of the atmosphere. For the first eight days of the month the weather was either rainy or very humid, wind generally N. E., and on the 6th and 7th the thermometer stood at 20 degrees through the day. On the 11th and 12th more rain. On the night of the 17th the rain also fell in great quantities, accompanied with lightning and heavy thunder; thermometer at 32. After this it became pleasant and continued so throughout the month, except on the 28th, when we again had more rain. On the 23d, however, the mercury stood as low as 23, wind considerable, and from the N. W.

Quarterly Report of the Diseases which prevailed in the city of New-York, during the months of January, February, and March, 1813.

So necessary are the tonic effects of the winter's cold to counteract the relaxation occasioned by the heat of the summer season in most of the United States, that, whenever we are

in this respect disappointed, sickness may be expected as the inevitable result. Hence the proverb, that *a green Christmas makes a fat church-yard in the spring*. In the present instance this is verified, for the unusually open and wet season, we have just passed through, has been attended with its corresponding diseases and mortality.

Inflammatory complaints, in all their various forms, have prevailed throughout the winter and the month of March. But in addition to the usual diseases of the latter month, which usher in the spring, we have also had occasion to see the mixed disease which has been so prevalent in the northern and eastern states, and in the western part of the state of New-York, the *peripneumonia typhodes*, or malignant pleurisy. The writer has had occasion to prescribe in five cases of this disease; in two of them, the patients both being of an athletic habit of body, the pulmonary affection was only relieved by large and repeated bleedings, in connection with the other antiphlogistic and alterative means usually prescribed in diseases of this compound character.

In the three other cases such was the general prostration of the system from the commencement, that it was not deemed safe to employ the lancet. The bowels being emptied by a mild laxative, our whole dependence was placed upon the use of small doses of *calomel*, *antimony*, and *opium*; sudorific drinks, fomentations to the extremities, and blisters to the chest. By this treatment, adapted to the different habits of body in which the disease occurred, the above five cases have all terminated successfully.

We are informed by one of the surgeons of the New-York hospital, that in two cases which ended fatally in that institution, the bodies were examined after death, and that in one the external surface of the lungs was covered with a membranous exudation and other marks of high inflammation. In the other, those organs exhibited no external marks of in-

flammation, but were so full of the mucous matter which had been effused throughout their whole cellular structure, that upon raising the sternum, they still retained their distended appearance, without the least of the usual collapse which takes place upon the admission of air into the cavity of the chest.

Besides this evidence of a peculiar condition of the atmosphere, we have also, for some weeks past, remarked, that the ordinary inflammatory diseases of the season have exhibited an unusual degree of malignancy, not only in their character, but in their termination. In a case of common cynanche tonsillaris, which in its commencement was very inconsiderable, and the febrile symptoms so mild as scarcely to confine the patient to his house, upon the third day, the uvula became sphacelated and dropt off: but by the use of a gargle of yest, borax, and honey, and the free use of sudorific drinks, the disease of the throat was arrested, and the patient restored. In another case, in a female about fifty-five years of age, an inflammation of the eye came on spontaneously without any previous exposure to cold, or any violence done to the part affected. In a few days, notwithstanding the use of the lancet, cathartics, blisters, and scarification of the parts affected, the whole eye became involved in the disease, attended with a general thickening of the cornea, and tunica adnata, and a manifest enlargement and protrusion of the whole organ. Even in this case, these symptoms were not accompanied with the usual redness and pain in the part, or the general symptoms attendant upon ophthalmia. On the contrary, there was a degree of insensibility of the eye amounting almost to paralysis, and a lax and turgid state of all the parts, the seat of the inflammation, accompanied with an œdema of the upper eye-lid. After these appearances took place, a general debility of the system suddenly supervened, followed by stupor and other evidences of compression of the brain, and ultimately proved fatal, exhibiting in the

last stage most of the symptoms of that form of apoplexy that frequently terminates the typhoid state of fever.

The measles and hooping-cough have prevailed throughout the winter, and still continue, retaining the mild character they exhibited upon their first appearance. During the last six weeks, many cases have also occurred, especially among children, of the *febrile nettle rash*, the *urticaria febrilis* of Dr. Willan. In some instances it also attacked adults, but in all it was exceedingly mild, being preceded by a very moderate degree of fever, and readily yielding to mild evacuations and tepid drinks. In a few cases the eruption was so universal, and attended with so much febrile excitement, that it was mistaken by some practitioners for scarlatina.

Hydrocephalus, in its acute form, is a disease of frequent occurrence in this city. Some cases have lately fallen under the care of the writer: in three of them a cure was effected by blood-letting, active cathartics, and blisters to the scalp, all which were made use of during the *inflammatory* stage of the disease, before the symptoms of effusion had taken place. In the other case the disease proved fatal notwithstanding the repeated use of the lancet, cupping, and other evacuations. But in the latter instance, mercury in the form of calomel, was employed in repeated and large doses. In the two former this medicine was not administered except as a cathartic in combination with large doses of jalap. This fact reminds us of the remark of Dr. Rush, that in consequence of his unsuccessful use of mercury in dropsy of the brain, he has "declined the use of that medicine altogether in that disease, except when combined with some purging medicine, and that he administers it in this form, chiefly with a view of dislodging worms."* Query. Does not mercury,

* Med. Inq. and Obser. vol. 2. p. 241. 3d. ed.

by the excitement it produces, add to the inflammation which characterises the first stage of hydrocephalus?

In the former volumes of this journal we have recorded cases of apoplexy, as the produce both of the intense heat of summer and the cold of winter. During the past winter several instances of this disease have fallen under our notice, especially in the aged, the intemperate and the indolent. By means of moderate evacuations, diminishing the fullness of the vessels, succeeded by the volatile alkali, and other stimulants calculated to restore the circulation through the parts which have been oppressed, this disease has frequently been removed. The dissections noticed by Mr. Abernethy in his valuable work on the diseases of the head, induce us to believe that even in sanguineous apoplexy, where extravasation may have taken place, as is proved by the apoplectic cells found in the brain after death, that recovery is not to be despaired of. During the last month we have had occasion to see a fatal case of this disease in a gentleman whom we had attended during the last three years in repeated and violent attacks. The following appearances observed upon dissection, clearly show both the exciting cause of his last fatal illness, and the impressions left by the paroxysms he had formerly sustained. Dr. J. A. Smith, the Professor of Anatomy in the College of Physicians and Surgeons, who at our particular request, examined the brain, has favoured us with the following memoranda.

"The vessels of the pia mater contained less blood than usual; a considerable effusion had taken place between that membrane and the tunica arachnoidea. The substance of the brain was softer than I ever recollect to have seen it in a person so recently dead: he was examined about six hours after his death. There was rather more water than usual in the ventricles. In the middle of the right hemisphere of the cerebrum a cell was discovered like those de-

scribed by Mr. Abernethy, and a much larger one of the same kind was afterwards found in the middle lobe of the cerebrum on the opposite side. The plexus choroides adhered slightly to the left thalamus, which appeared of a dusky red colour, and upon cutting into it there was found a considerable quantity of effused, coagulated blood. This had, no doubt, been the cause of the patient's death. The effusion and cell, last mentioned, are completely shown in a preparation which I have made of the parts."

OBITUARY.

Died, at his Mansion House, Clermont, on the 26th of February, in the 66th year of his age, the Hon. Robert R. Livingston, LL. D. President of the Society for the Promotion of Useful Arts, and formerly Minister of the United States, at the court of France, &c. &c.

RECENT AMERICAN PUBLICATIONS.

Annual Address, delivered by appointment, before the Society for the Promotion of Useful Arts, at the capitol, in the city of Albany, on the 3d of February 1813. By Theodoric Romeyn Beck, M. D. Fellow of the College of Physicians and Surgeons, New-York, and one of the Counsellors of the Society for the Promotion of Useful Arts. 8vo. Albany. Websters and Skinner.

Professor Cullen's System of the Materia Medica, with notes and additions. By Benj. S. Barton, M. D. &c. 8vo. 2 vols. Philadelphia. E. Parker.

The Principles of Surgery, by John Bell, Surgeon. Abridged by J. Augustine Smith, M. D. of the Royal College of Surgeons, London; Professor of Anatomy, Surgery, and Physiology in the College of Physicians and Surgeons in the University of the State of New-York. With Notes and Additions. 8vo. New-York. Collins & Co.

The American Universal Geography. By Jedidiah Morse, D. D. sixth edition enlarged. 2 vols. 8vo. Boston. Thomas & Andrews.

The Literary and Philosophical Repertory, No. 1. Conducted by Professor Hall, of Middlebury College, Vt. Published occasionally. 8vo. Middlebury, Vermont.